

# AQUATIC ECOSYSTEM INVENTORY

## Macroinvertebrate Analysis

### Annual Progress Report

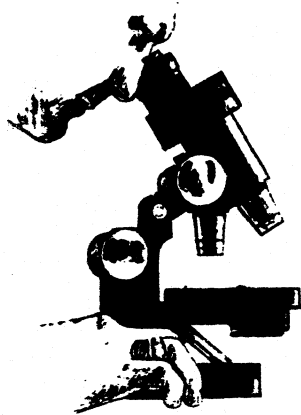
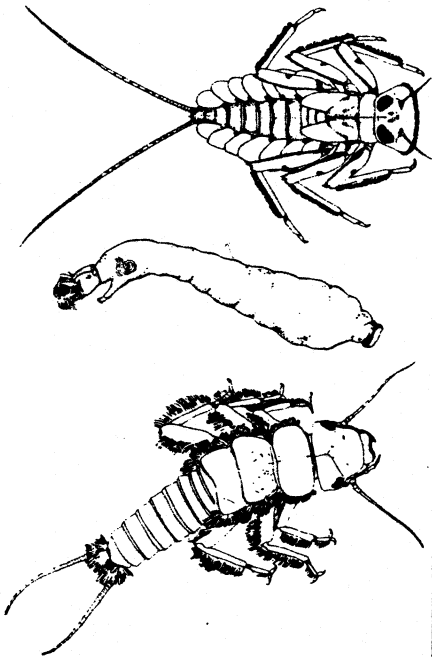
MT. HOOD NATIONAL FOREST

B-t SPRAY PROJECT

1988



**Forest Service  
Intermountain Region**



**AQUATIC ECOSYSTEM INVENTORY**  
Macroinvertebrate Analysis

**MT. HOOD NATIONAL FOREST**  
1988

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AQUATIC ECOSYSTEM ANALYSIS  
FOR BADGER CREEK AND TYGH CREEK  
ON THE MT. HOOD NATIONAL FOREST  
B-t SPRAY PROJECT

1988

BACKGROUND AND METHODS

In recent years land managers on many of our forests and BLM districts in the west have improved the stability and reliability of land management plans and decisions by sampling aquatic organisms which act as natural monitors of management activities within the drainages on public lands.

During short-term exposure to water of poor quality or adverse changes in habitat, organisms that cannot tolerate the stress are destroyed and the aquatic macroinvertebrate community structure changes. Since aquatic organisms respond to their total environment, they can become an effective tool for detection of environmental changes.

Our analysis of aquatic ecosystems is based upon multiple factors including:

1. Various macroinvertebrate data - Community dry-weight biomass/sample expressed in  $\text{gm/m}^2$ ; number of individuals per taxa (resident populations?); DAT Diversity Index, which combines a measure of dominance and number of taxa; habit, habitat and feeding preferences of individual taxa or species; specific tolerances of taxa; community composition; and BCI (Biotic Condition Index), which indicates as a percentage how close an aquatic ecosystem is to its own potential.

2. Physical parameter data and

3. Water chemistry data

Effective use of the Biotic Condition Index (BCI) depends upon the availability of data on stream gradient, natural capability of instream substrate (may not be the composition present if man-influenced sedimentation is found at the sample



station), total alkalinity, and sulfate in mg/l.

Because of the way that macroinvertebrates occupy space within a stream, it generally takes at least three samples to represent the community accurately at a given station. One sample per station costs less but has little value for aquatic habitat assessment, one never knows if such single samples represent the best, the worst or an average of possible conditions at the sampling site. Also as a side benefit, three samples per station provides a basis for various statistical analyses, if random samples are all taken from a rubble substrate in as similar habitat as possible, taking into account mainly the velocity of flow and depth in the stream. Biologists have found that compared to other sampling devices, the Winget-modified surber net yields the highest coefficient of correlation (similarity of samples).

A stream's natural potential for productivity, habitat quality and water quality can be compared to the "actual" by taking quantitative samples of aquatic macroinvertebrates. Careful analysis of macroinvertebrate communities can reveal condition and trends in aquatic ecosystems. Sampling and analysis is conducted in accordance with procedures outlined in FSH R-4 2609.23, March 1985, Fisheries Habitat Surveys Handbook.

This report is based upon 180 aquatic macroinvertebrate samples along with water chemistry and physical habitat data provided by your aquatic specialists. Three stations were sampled on each of two streams to monitor the possible effects of a Bacillus thuringiensis (B-t) spray project for spruce budworm. A Control Station was established above the spray zone on both Badger Creek and Tygh Creek, with two experimental stations on each stream, one directly within the spray zone and one below the area to be sprayed.

Samples were taken from each of the stations the day before the spray project, the afternoon of the spray project, the day after the spray project, one week, one month and three months following the spray project, to monitor possible immediate and delayed effects on the aquatic macroinvertebrate communities. The last set of samples were taken in September after a three month recovery period.

## SUMMARY

The macroinvertebrate data from Badger Creek samples indicate there may have been an initial impact, particularly upon the stoneflies in the community. By September there were indications that most of the possible impacts were temporary and not severe. Most of the species had been reestablished in the sampled stream reaches either from eggs deposited or from drift organisms. There were some differences in the community composition when experimental data were compared with those from the Control Station, but in most cases the pattern of occurrence was the same. Most of the species that disappeared after the B.t. application, reappeared by September. Their disappearance may have been due to the effects of the spray, emergence, sampling error or variability due to slight differences in habitat sampled.

On Tygh Creek the macroinvertebrate community at Station 3.3 did not show any abrupt adverse changes in community structure corresponding to the time of the spray project. There were some early changes in the community at Station 8.4 but they were not dramatic or sustained over time. Trophic group occurrence is shown in Tables 13 and 14 for Stations 3.3 and 8.4. In September the macroinvertebrate samples did not show some of the typical fall changes in the community structure, but few if any species appeared to be affected and most were present in September samples which indicated that if some species were affected initially or over time by the spray project, most were resilient enough to become reestablished within 3 months time.

In general, sampling appeared to be efficiently done on Badger Creek and Tygh Creek. If enough samples were taken the percent standard error of the mean on the computer printouts will be under 20. A numerical value under 50 for the coefficient of variation on the computer printouts indicates good sampling technique.

In some ways aquatic macroinvertebrate data are about as straight-forward and uncomplicated as any data one could use, and more reliable than most. For a given stream reach one can clearly determine from benthic samples if the water chemistry, habitat conditions or other environmental factors are limiting to organisms in particular niches or to the community in general.

In each of the streams monitored, good macroinvertebrate diversity was maintained. There were some subtle changes in community structure and composition that raised questions, but none indicated development of chronic problems. If there is concern about the few question marks that remain, another set of samples could be taken on these streams in early June of 1989.

## BADGER CREEK

Three stations were sampled on Badger Creek. The stations were designated by the number of miles from the mouth and included Stations 6.2, 9.3 and 12.1. Station 12.1 was the Control Station located above the spray zone, Station 9.3 was directly within the spray zone, and Station 6.2 would be influenced by the spray but was located below the spray zone. Each of these Stations will be analyzed separately, then compared to observe community changes and their possible implications.

Compared with the community found before the spray project on June 7, the community sampled the same day of the spray project had fewer species at Station 6.2. The number of taxa was reduced from 46 to 39 and most of the change was within the stonefly and mayfly groups with four stonefly species and two mayfly species being lost. A community change was also reflected by other analysis elements including the Biotic Condition Index (BCI) value which was reduced from 91 on June 7 to 81 on June 8. The community standing crop was reduced from 3.1 to 2.7 and the DAT Diversity Index value from 17.7 to 13.9. The total number of organisms did not reflect a negative change.

On June 9, the day after the spray project, the number of taxa (42) was up to within four of the 46 found the day before the project. The BCI value of 82 remained about the same as found on the day of the spray as did the biomass at  $2.9 \text{ g/m}^2$  and the DAT value was similar at 14.3. The total number of organisms/ $\text{m}^2$  was similar to that found on June 8.

One week after the spray project the number of taxa was back up to the number found on the June 7 prespray date. The BCI value of 81 still indicated a more tolerant community than was found on June 7. The standing crop was down to  $2.0 \text{ g/m}^2$  but the DAT Diversity Index value was back up to 16.7, close to that found in the prespray samples. The number of organisms/ $\text{m}^2$  was lower than found on the prespray date.

On July 14, a month after the spray project, the number of taxa was 43 which was 3 less than found on the prespray date. The BCI value of 82 remained consistent with those found on sampling dates following the spray project. The biomass of 2.6 was close to that found in other post-spray samples. The DAT value of 13.7 was about that found just after the spray

project. The number of organisms/m<sup>2</sup> had climbed to near that found in the prespray community.

The 45 taxa found when sampled 3 months later, in September, was close to that found (46) on the prespray date, the BCI value of 83 was close to other post-spray values. The stream environment was believed, in part, to be in less than excellent range due to impacts from cattle grazing in the lower reaches and in the vicinity of Station 6.2. The macroinvertebrate standing crop of 3.2 was close to the 3.1 g/m<sup>2</sup> found in the prespray community on June 7. The DAT value of 19.6 indicated good diversity in the community. The number of organisms in the community was over 29,000/m<sup>2</sup>. This high number was due in part to the abundance of sedimentation and organic enrichment tolerant taxa from grazing activities within the area.

On the September sampling date there were 13 stonefly taxa in the community which was six more than found in the prespray community. The percentage of trophic groups in the community on each of the sampling dates can be observed on Table 4.

At Station 6.2 the community composition appeared to be good and there appeared to be a good balance among the trophic groups on most of the sampling dates. There was a drop in the number of predators which is mainly due to the reduction of stoneflies in the community on the June 8 sampling date. This percentage was also low on the July 14 sampling date.

On September 19 there was a higher percentage of scrapers in the community, due primarily to the abundance of organic nutrients in the system which would increase the diatoms and the algae that are scraped from the rocks by these species. Ordinarily one would expect to get an increase in the number of shredders in the community in the Fall. This did not occur, in fact there was a decrease in the number of shredders in September at Station 6.2 when they were represented by only 5% of the community. This may be due to impacts on the riparian habitat by the grazing activities within the vicinity of this station.

In Table 7 one can observe the occurrence of various taxa found at Station 6.2 on each of the dates the community was sampled. Some of these species disappeared after the spray project. The following will be a discussion on the possible implications of these species disappearing from the benthic samples for a period of time.

Eight of the mayfly species were missing from the community when sampled during various times of the sampling period. Rhithrogena was missing from the samples after June 8 but reappeared September 19. The adult emergence of this species is during spring and summer so it's absence could possibly be due to emergence during which time it would not be found in the community. This mayfly did reappear September 19 and thus was not eliminated from the community by the spray project. Some of the mayfly species were found on each of the sampling dates and did not indicate any impacts from the spray project. These included Epeorus, Cinygmula, Ephemerella inermis and Baetis.

One of the most sensitive of the mayfly species, Ephemerella doddsi, was found periodically through the sampling period and was found in the September samples. Ephemerella spinifera was missing from the samples after the spray project. This species is known to emerge in summer months and the same pattern of occurrence was observed at the Control Station, 12.1. Ephemerella coloradensis disappeared after the June 15 sampling date. It is known to emerge in the summer and fall and it also had the same pattern at the Control Station. Ephemerella tibialis was found on all but the last sampling date, it has a summer emergence pattern and it also had a similar pattern at the Control Station. Ephemerella delantala was found on the first three dates in June but was missing thereafter and did not reappear. Ephemerella teresa, which has a summer emergence, was found on the June sampling dates but was missing in July and September. Tricorythodes minutus was found on June 8 and then was missing on the rest of the June and July sampling dates but reappeared in September samples, so it was not eliminated from the community.

There were eight stonefly taxa that appear to have possible effects from the spray project. Of these Megarcys, which emerges in spring and summer, was found only in the June 7 samples and did not reappear in September, thus may be a species affected by the spray project. The stonefly Zapada was missing from the community only on June 8 and September 19. Emergence time for this species varies and may be during winter, spring or summer. Malenka, which emerges quarterly was found only on the June 7 sampling date and not in samples thereafter. It did not appear on September 19 and thus may be another species affected by the spray project. Species in the family Capniidae were found only in the September samples. This was the same pattern observed at the Control Station 12.1. The large stonefly Hesperoperla pacifica was missing from the June 8 and 9 samples and July 14, but was found in the June 15 and

September 19 samples. The effects on this species may have just been temporary. The emergence time is spring and summer for this species but it did appear in September samples and thus was not eliminated by the spray project. Another of the large stoneflies Calineura, was found only on the June 9 sampling date, which was the same pattern observed at the Control Station (12.1). Pteronarcissa badia was missing from the community after June 7, but it did reappear by September 19, thus it was not eliminated from the community entirely.

There were 8 taxa in the order Trichoptera that may have been affected by the spray project. Some trichopteran species that did not appear to be affected were Hydropsyche, Cheumatopsyche, Glossosoma and Rhyacophila which were found on each of the sampling dates. Alisotrichia was found only on the September sampling date, but the same pattern was observed at the Control Station. Arctopsyche was found in the June 7 and 15 samples but in none of the other samples. It has a spring and summer emergence period but may have been affected by the spray project. One of the Limnephilid caddisflies Dicosmoecus was found only on June 7 and July 14. It has a spring and summer emergence period. It did not reappear in September.

Another of the caddisflies, Neophylax was found in June but not on the July or September sampling dates. It has a spring emergence pattern. Microsoma was found during the same period of time but was missing on the last two sample dates. Its emergence time is spring and summer. Another of the Limnephilids Hesperophylax, was found June 15 and July 14 and at the Control Station it was found only on July 14. Agraylea was found only on July 14 and this was the same pattern found at the Control Station.

Most of the dipterans found in the community were present consistently throughout the period of time sampled, however, Maruina was missing for the last three sample dates and did not reappear in September, nor did it reappear on that date at the Control Station.

The clams, Pelecypods, were found at Station 6.2 June 7, 9 and 15. These species were only found on June 15 at the Control Station. It appears although there may be some possibility of some initial impact from the spray project, in nearly all cases, the species missing following the spray reappeared by September indicating they were not eliminated from the community.

The number of taxa at Station 9.3 was reduced gradually following the spray project on June 7. In the prespray community there were 44 taxa. This was reduced to just 41 on June 8 and 39 on June 9. By June 15 the number of taxa was down to 34, so there may have been a delayed effect on this community which ordinarily would be expected with the type of spray project that was carried out. By July 14, however, the number of taxa was back up to 42, which was close to the 44 found in the prespray community. Finally, in September the number of taxa was 39.

In June 7 samples there were 5 stonefly taxa, on June 8 there were 6 and by June 9 this number was down to 3. On June 15 there were 5 stonefly species, July 14 there were 8 and by September 9 there were 10 stonefly taxa in the community at Station 9.3. Other insect orders appeared to remain rather stable in the community. A more tolerant community was found at Station 9.3 on the June 8 sampling date than was found in the prespray community.

The BCI value on June 7 was 89, and June 8 was 78 indicating a more tolerant community on that sampling date. By June 9 however it was 83 and on June 14 the BCI was 88, almost that (89) found on the prespray period. By July 14 the BCI value of 89 was the same as found on June 7. In September the BCI value was 85 which indicated good conditions at this station.

The macroinvertebrate standing crop took a drop after the spray project. It went from  $2.3 \text{ g/m}^2$  June 7 to  $1.4 \text{ g/m}^2$  June 8 and by June 9 it was down to  $0.7 \text{ g/m}^2$ . On June 15 the biomass climbed to 1.3, June 14 to 3.6 and September 19 back to  $1.8 \text{ g/m}^2$ . The diversity in the community remained about the same. The DAT value did not vary much, it was 16.2 June 7 and 15.9 on the 8th and 15.3 on the 9th. It dropped into the 14 range by mid June and mid July then back up to 15.6 by September. Diversity in the community did not change dramatically nor did the number of organisms/ $\text{m}^2$  reflect changes in the community structure, as indicated on the data sheet.

The DAT Diversity Index values were near excellent for most of the sampling dates and varied slightly. Also typical of upper stream reaches, the number of organisms/ $\text{m}^2$  was just over 5,000 on the June 7 sampling date and did not change much on other June sampling dates. Community numbers were elevated by July and September sampling dates and corresponded fairly closely with those at the other stations sampled.



Table 8 shows the occurrence of the macroinvertebrate taxa on each of the sampling dates at Station 9.3, which was within the spray zone on Badger Creek. There were six mayfly taxa that may have been affected by the spray project. Ephemerella spinifera was found only on the last two sampling dates. Ephemerella coloradensis was missing on the last two sampling dates, but has a summer and fall emergence pattern. Ephemerella delantala was found only in the June 8 and July 14 sampling dates but that was the same pattern found at the Control Station. Ephemerella heterocudata and Ephemerella orestis were found only on the June 7 sampling date before the spray project and did not reappear by September. Both of these species may have been affected by the spray project. Tricorythodes was found only on the September 9 sampling date and thus was not eliminated by the spray project.

Three of the stoneflies were possible candidates for being affected by the spray project. Megarcys was found only on the July 14 sampling date and has a spring and summer emergence period, but it did not reappear by September 9. The large stonefly Calineuria was missing from the community after June 8 but did reappear by September 9. It has a spring, summer emergence period. Pteronarcissa badia was found only July 14, it also has a spring, summer emergence period.

Of the caddisflies, Hydropsyche was missing only July 14 but reappeared by September 9. Oligophleboides was found only on the June 7 sampling date and was missing thereafter and did not reappear by September. Glossosoma which was found on each of the post-spray sampling dates at Station 6.2, was missing from the community June 9, 15 and September 9 at Station 9.3.

In the order diptera Marquina was missing after June 15. It has a summer emergence period. Pericoma was found on the June 7 sampling date but reappeared by September. It has a spring, summer emergence period.

Of the miscellaneous macroinvertebrates present at Station 9.3, the clams, Pelecypods, were found June 7 and 8 but not found thereafter. This indicates it may have been affected by the spray project. Planaria was found on the June sampling dates but not thereafter and may also have been affected by the spray project. The Ostracods, Oligochaetes and Water Mites (Acarina) did not appear to be affected and were present on each of the sampling dates.

Table 5 shows that on each of the sampling dates the trophic groups at Station 9.3 had a good balance with the exception on shredders on the September date. Ordinarily the shredders would increase in numbers in porportion to other species in the fall, but this did not happen. These are primarily stonefly species. Although it does not appear to be critical, the spray project may have had some influence upon the stonefly group.

At the Control Station 12.1, the number of taxa remained fairly static. It ranged from 39 on the June 15 sampling date to 42 on the June 7 sampling date. The BCI values indicated good conditions at this station with small fluctuations ranging from 82 on the June 7 sampling to 85 on the September sampling date, with a BCI of 86 on June 8. The macroinvertebrate biomass was lower than found at the lower stations which is often the case. The biomass was higher on June 8 than on June 7. On June 9 it was back to about the same as found on June 7,  $1.0 \text{ g/m}^2$ , about what one would expect in a stream with 30 mg/l alkalinity. Good biomass readings, over  $2.0 \text{ g/m}^2$ , were found on the July and September sampling dates.

At the Control Station (12.1) clean water species indicated good water quality on each of the sampling dates with some indications of slight amount of sedimentation and organic enrichment, particularly on the July and September sampling dates. The observed number of shredders in the community on the July and September sampling dates is generally found where riparian habitat is in good condition. Clean water species indicated good water quality and some good instream substrate in this reach of stream.

Table 9 indicates the occurrence of the macroinvertebrate taxa at the Badger Creek Control Station 12.1 for comparison with the experimental stations. Table 6 indicates the percentage of the trophic groups at Station 12.1 on each of the dates sampled. It may be observed that the shredders made up a higher percentage of the community in September than it did in other months at the control station. This would be expected because their numbers should increase during the fall months. This was not observed at the other two stations. Other trophic groups at the experimental stations compared favorably with those found at the control station.

## USFS - INTERMOUNTAIN REGION - ANNUAL PROGRESS REPORT

## MACROINVERTEBRATE ANALYSIS

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 Forest Service Cat.-No. B-t Spray Project

B.

Organism/m <sup>2</sup>	Station	Date(s)	Diversity Index DAT (mean)	Standing Crop g/m <sup>2</sup> (mean)	Biotic Condition Index BCI 50	# Taxa
18,740	6.2	6-07-88	17.7	3.1	91	46
13,717	9.3	6-07-88	16.2	2.3	89	44
5,219	12.1	6-07-88	16.9	0.6	82	42
23,747	6.2	6-08-88	13.9	2.7	81	39
11,782	9.3	6-08-88	15.9	1.4	78	41
8,522	12.1	6-08-88	18.4	1.3	86	43
22,357	6.2	6-09-88	14.3	2.9	82	42
10,874	9.3	6-09-88	15.3	0.7	83	39
4,980	12.1	6-09-88	17.2	0.5	83	40
13,112	6.2	6-15-88	16.7	2.0	81	46
14,117	9.3	6-15-88	14.5	1.3	88	34
7,706	12.1	6-15-88	17.2	1.0	82	39
17,887	6.2	6-14-88	13.7	2.6	82	43
24,374	9.3	6-14-88	14.8	3.6	89	42
24,055	12.1	6-14-88	15.6	2.2	82	41
29,517	6.2	6-19-88	19.6	3.2	83	45
18,912	9.3	6-19-88	15.6	1.8	85	39
15,748	12.1	6-19-88	17.6	2.8	85	41

## Scale:

Excellent  
 Good  
 Fair  
 Poor

## DAT

18 - 26  
 11 - 17  
 6 - 10  
 0 - 5

## Standing crop

4.0 - 12.0  
 1.6 - 4.0  
 0.6 - 1.5  
 0.0 - 0.5

## BCI

above 90  
 80 - 90  
 72 - 79  
 below 72

TABLE 1. MT. HOOD NATIONAL FOREST--BADGER CREEK STATION 6.2  
ECOLOGICAL ASSOCIATIONS LIST FOR ALL OF THE TAXA FOUND IN SAMPLES  
TAKEN JUNE 7,8,9,15, JULY 14 AND SEPTEMBER 19, 1988.

Taxa	Habitat <sup>a</sup>	Habit <sup>b</sup>	Trophic Relationship <sup>c</sup>
<b>Ephemeroptera</b>			
<u>Epeorus</u> sp.	1	1	1,2,3
<u>Cinygmula</u> sp.	1,2	1	1,2,3 det,dia
<u>Heptagenia</u> sp.	1,2	1	1,2,3,6
<u>Rhithrogena</u> sp.	1	1	1,2,3 det,dia
<u>Ephemerella inermis</u>	1,2	1	1,2 det,dia
<u>Ephemerella doddsi</u>	1	1,2,4	1,2,3,6 det,dia
<u>Ephemerella spinifera</u>	1	1,2,4	1,2,6
<u>Ephemerella coloradensis</u>	1,2	1	1,2,3 det,dia
<u>Ephemerella tibialis</u>	1	1,2	1,2
<u>Ephemerella delantala</u>	1	1,2	1,2
<u>Ephemerella teresa</u>	1	1,2	1,2
<u>Ephemerella hecuba</u>	2	1,2,5	1,2
<u>Paraleptophlebia</u> sp.	1,2	1,2,4	1,2,5 det,dia
<u>Tricorythodes minutus</u>	2	1,2	1,2
<u>Ameletus</u> sp.	1,2	1,4	1,2 det,dia
<u>Baetis</u> sp.	1,2	1,3,4	1,2,3 det,dia
<b>Plecoptera</b>			
Chloroperlidae	1	1	1,2,3,6
<u>Skwala parallela</u>	1	1	6
• <u>Megarcys</u>	1	1	6
<u>Cultus</u> sp.	1	1	6
<u>Taenionema</u> sp.	1,2	1,2	3
<u>Isoptera</u> sp.	1,2	1,2	1,2,6 chi,eph
<u>Isoxenosides</u>	1	1	3,6
• <u>Zapada</u> sp.	1	1,2	5 det
• <u>Malenka</u>	1,2	1,2	5 det
Capniidae	1,2	1,2	5 det
Leuctridae	1,2	1,2	5 det
<u>Amphinemura</u>	1,2	1,2	1,2,5 det
<u>Podmosta</u> sp.	1,2	1,2	3,5 det
Perlidae	1	1	6
Perlodidae	1	1	6
<u>Perlinodes</u>	1	1	6
• <u>Hesperoperla pacifica</u>	1	1	6
<u>Claassenia sabulosa</u>	1	1	6
<u>Calineuria</u>	1	1	6
• <u>Pteronarcella badia</u>	1,2	1,2	3,5,6 det
<b>Trichoptera (addis)</b>			
<u>Hydropsyche</u> sp.	1,2	1,6	1,4 det,ani
<u>Cheumatopsyche</u> sp.	1,2	1,6	1,4 det,ani
<u>Alisotrichia</u>	1	1	1,2,3

TABLE 1 - Continued

<u>Arctopsyche</u> sp.	1	1,6	1,4
<u>Dicosmoecus</u>	1	2	3,5,6 det
• <u>Neophylax</u>	1,2	1,2	5
* <u>Micrasema</u> sp.	1	2,8	1,2,5
<u>Amiocentrus</u>	1	1,3	1,2
<u>Glossosoma</u> sp.	1	1,8	3 dia
<u>Rhyacophila</u> sp.	1	1	1,2,6
<u>Ecclisomyia</u>	2	2	5
Limnephilidae	1,2	1,2,3	1,2,3,5
* <u>Hesperophylax</u>	1,2	2	5,3,1,2 det
<u>Manophylax</u>	1	1	3
Philopotamidae	1	1	1,4
<u>Hydroptila</u>	1,2	1	3,7
<u>Goera</u>	1	1	3
<u>Agraylea</u>	1	1	7,1,2
Coleoptera			
Elmidae	1	1,3	1,2,3
Dytiscidae	1,2	3,4	7
Diptera			
<u>Antocha monticola</u>	1	1,7	1,2
<u>Hexatoma</u> sp.	1,2	1,2,5	6
<u>Dicranota</u>	1,2	2,5	1,5,6
<u>Glutops rossi</u>	2	2,5	7
Simuliidae	1	1	1,4
Chironomidae	1,2	2,5,7	1,2,4,6,7
Empididae	1,2	2,5	1,2,6
Ceratopogonidae	2	2,5	1,2
<u>Atherix</u>	1,2	3,4	1,2
Tabanidae	2	5	6
<u>Maruina</u>	2	5	1,2
Odonata			
Gomphidae	2	5	6
<u>Ophiogomphus</u>	1,2	5	6
Coenagrionidae	1,2	3	6
Ostracoda			
Pelecypoda	2	5	4
Oligochaeta	2	2,5	1,2
Hydracarina	1,2	1	7,8
Nematoda	1,2	1,2,5	1 det
Copepoda	2-lentic	3,4	1,3,4 det, ani

a. 1=lotic,  
erosional  
2=lotic  
depositional

b. 1=clingers  
2=sprawlers  
3=climbers  
4=swimmers  
5=burrowers  
6=net spinners  
7=tube makers  
8=case makers

c. 1=collectors  
2=gatherers  
3=scrapers  
4=filterers  
5=shredders  
6=engulfers  
7=piercers  
8=parasitic

det=detritus  
dia=diatoms  
chi=Chironomidae  
eph=Ephemeroptera  
ani=animal

TABLE 2. MT. HOOD NATIONAL FOREST--BADGER CREEK STATION 9.3  
ECOLOGICAL ASSOCIATIONS LIST FOR ALL OF THE TAXA FOUND IN SAMPLES  
TAKEN JUNE 7,8,9,15, JULY 14 AND SEPTEMBER 19, 1988

Taxa	Habitat <sup>a</sup>	Habit <sup>b</sup>	Trophic Relationship <sup>c</sup>
<b>Ephemeroptera</b>			
<u>Epeorus</u> sp.	1	1	1,2,3
<u>Cinygmula</u> sp.	1,2	1	1,2,3 det,dia
<u>Rhithrogena</u> sp.	1	1	1,2,3 det,dia
<u>Heptagenia</u> sp.	1,2	1	1,2,3,6
<u>Ephemerella inermis</u>	1,2	1	1,2 det,dia
<u>Ephemerella doddsi</u>	1	1,2,4	1,2,3,6 det,dia
<u>Ephemerella spinifera</u>	1	1,2,4	1,2,6
<u>Ephemerella coloradensis</u>	1,2	1	1,2,3 det,dia
<u>Ephemerella tibialis</u>	1	1,2	1,2
<u>Ephemerella delantala</u>	1	1,2	1,2
<u>Ephemerella teresa</u>	1	1,2	1,2
<u>Ephemerella hecuba</u>	2	1,2,5	1,2
<u>Ephemerella heterocaudata</u>	1	1,2	1,2
<u>Ephemerella orestes</u>	1	1	1,2,3
<u>Paraleptophlebia</u> sp.	1,2	1,2,4	1,2,5 det,dia
<u>Tricorythodes minutus</u>	2	1,2	1,2
<u>Ameletus</u> sp.	1,2	1,4	1,2 det,dia
<u>Baetis</u> sp.	1,2	1,3,4	1,2,3 det,dia
<b>Plecoptera</b>			
<u>Chloroperlidae</u>	1	1	1,2,3,6
<u>Skwala parallela</u>	1	1	6
<u>Hesperoperla pacifica</u>	1	1	6
<u>Megarcys</u>	1	1	6
<u>Cultus</u> sp.	1	1	6
<u>Malenka</u>	1,2	1,2	5 det
<u>Zapada</u> sp.	1	1,2	5 det
<u>Perlidae</u>	1	1	6
<u>Perlodidae</u>	1	1	6
<u>Perlinodes</u>	1	1	6
<u>Amphinemura</u>	1,2	1,2	1,2,5 det
<u>Isoperla</u> sp.	1,2	1,2	1,2,6 chi,eph
<u>Calineuria</u>	1	1	6
<u>Pteronarcella badia</u>	1,2	1,2	3,5,6 det
<b>Trichoptera</b>			
<u>Hydropsyche</u> sp.	1,2	1,6	1,4 det,ani
<u>Cheumatopsyche</u> sp.	1,2	1,6	1,4 det,ani
<u>Alisotrichia</u>	1	1	1,2,3
<u>Dicosmoecus</u>	1	2	3,5,6 det
<u>Oligophlebodes</u>	1	1	1,2,3
<u>Neophylax</u>	1,2	1,2	5
<u>Micrasema</u> sp.	1	2,8	1,2,5

TABLE 2 - Continued

<u>Glossosoma</u> sp.	1	1,8	3	dia
<u>Rhyacophila</u> sp.	1	1	1,2,6	
<u>Ecclisomyia</u>	2	2	5	
<u>Polycentropus</u>				
Limnephilidae	1,2	1,2,3	1,2,3,5	
<u>Hydroptila</u>	1,2	1	3,7	
<u>Agraylea</u>				
Coleoptera				
Elmidae	1	1,3	1,2,3	
Carabidae				
Diptera				
<u>Antocha monticola</u>	1	1,7	1,2	
<u>Hexatoma</u> sp.	1,2	1,2,5	6	
<u>Glutops rossi</u>	2	2,5	7	
Simuliidae	1	1	1,4	
Chironomidae	1,2	2,5,7	1,2,4,6,7	
Empididae	1,2	2,5	1,2,6	
Ceratopogonidae	2	2,5	1,2	
<u>Atherix</u>	1,2	3,4	1,2	
Tabanidae	2	5	6	
<u>Maruina</u>	2	5	1,2	
<u>Pericoma</u>	2	5	1,2	
Ostracoda	2	8	4	
Pelecypoda	2	5	4	
<u>Planaria</u> sp.	1	1,3,4	1	scavengers
Oligochaeta	2	2,5	1,2	
Hydracarina	1,2	1	7,8	
Nematoda	1,2	1,2,5	1	det
Copepoda	2-lentic	3,4	1,3,4	det, ani
<hr/>				
a. 1=lentic, erosional 2=lentic depositional	b. 1=clingers 2=sprawlers 3=climbers 4=swimmers 5=burrowers 6=net spinners 7=tube makers 8=case makers	c. 1=collectors 2=gatherers 3=scrapers 4=filterers 5=shredders 6=engulfers 7=piercers 8=parasitic	det=detritus dia=diatoms chi=Chironomidae eph=Ephemeroptera ani=animal	

TABLE 3. MT. HOOD NATIONAL FOREST--BADGER CREEK STATION 12.1  
ECOLOGICAL ASSOCIATIONS LIST FOR ALL OF THE TAXA FOUND IN SAMPLES  
TAKEN JUNE 7,8,9,15, JULY 14 AND SEPTEMBER 19, 1988

Taxa	Habitat <sup>a</sup>	Habit <sup>b</sup>	Trophic Relationship <sup>c</sup>
<b>Ephemeroptera</b>			
<u>Epeorus</u> sp.	1	1	1,2,3
<u>Cinygmula</u> sp.	1,2	1	1,2,3 det,dia
<u>Rhithrogena</u> sp.	1	1	1,2,3 det,dia
<u>Ephemerella inermis</u>	1,2	1	1,2 det,dia
<u>Ephemerella doddsi</u>	1	1,2,4	1,2,3,6 det,dia
<u>Ephemerella spinifera</u>	1	1,2,4	1,2,6
<u>Ephemerella coloradensis</u>	1,2	1	1,2,3 det,dia
<u>Ephemerella tibialis</u>	1	1,2	1,2
<u>Ephemerella delantala</u>	1	1,2	1,2
<u>Ephemerella teresa</u>	1	1,2	1,2
<u>Ephemerella hecuba</u>	2	1,2,5	1,2
<u>Ephemerella margarita</u>	1	1	1,2
<u>Paraleptophlebia</u> sp.	1,2	1,2,4	1,2,5 det,dia
<u>Ameletus</u> sp.	1,2	1,4	1,2 det,dia
<u>Baetis</u> sp.	1,2	1,3,4	1,2,3 det,dia
<b>Plecoptera</b>			
<u>Chloroperlidae</u>	1	1	1,2,3,6
<u>Skwala parallela</u>	1	1	6
<u>Hesperoperla pacifica</u>	1	1	6
<u>Mezarcys</u>	1	1	6
<u>Cultus</u> sp.	1	1	6
<u>Kogotus</u>	1	1	6
<u>Visoka</u>	1	1,2	5 det
<u>Zapada</u> sp.	1	1,2	5 det
<u>Malenka</u>	1,2	1,2	5 det
<u>Yoraperla</u>	1,2	1,2	3,5 det
<u>Capniidae</u>	1,2	1,2	5 det
<u>Leuctridae</u>	1,2	1,2	5 det
<u>Perlidae</u>	1	1	6
<u>Perlinodes</u>	1	1	6
<u>Amphinemura</u>	1,2	1,2	1,2,5 det
<u>Isoperla</u> sp.	1,2	1,2	1,2,6 chi,eph
<u>Calineuria</u>	1	1	6
<u>Isogenoides</u>	1	1	3,6
<b>Trichoptera</b>			
<u>Hydropsyche</u> sp.	1,2	1,6	1,4 det,ani
<u>Glyphopsyche</u>	2	2	1,4
<u>Cheumatopsyche</u> sp.	1,2	1,6	1,4 det,ani
<u>Alisotrichia</u>	1	1	1,2,3 -
<u>Micrasema</u> sp.	1	2,8	1,2,5
<u>Glossosoma</u> sp.	1	1,8	3 dia
<u>Rhyacophila</u> sp.	1	1	1,2,6



TABLE 3 - Continued

<u>Psychomyia</u>	1	1	1,2,3
<u>Polycentropus</u>	1	1	6,1,5
Limnephilidae	1,2	1,2,3	1,2,3,5
Lepidostomatidae	1,2	1,2,3,8	5 det
<u>Hesperophylax</u>	1,2	2	5,3,1,2 det
<u>Hydroptila</u>	1,2	1	3,7
<u>Agraylea</u>	1	1	7,1,2
Coleoptera			
Elmidae	1	1,3	1,2,3
Diptera			
<u>Antocha monticola</u>	1	1,7	1,2
<u>Hexatoma</u> sp.	1,2	1,2,5	6
<u>Dicranota</u>	1,2	2,5	1,5,6
<u>Glutops rossi</u>	2	2,5	7
Simuliidae	1	1	1,4
Chironomidae	1,2	2,5,7	1,2,4,6,7
Empididae	1,2	2,5	1,2,6
Ceratopogonidae	2	2,5	1,2
<u>Dixa</u>	1,2	4,1	1,2
<u>Atherix</u>	1,2	3,4	1,2
Tabanidae	2	5	6
<u>Maruina</u>	2	5	1,2
<u>Pericoma</u>	2	5	1,2
Odonata	2	1,3	6
<u>Planaria</u> sp.	1	1,3,4	1 scavengers
Ostracoda	2	8	4
Pelecypoda	2	5	4
Oligochaeta	2	2,5	1,2
Nematoda	1,2	1,2,5	1 det
Copepoda	2-lentic	3,4	1,3,4 det, ani
Hydracarina	1,2	1	7,8
<u>Sialis</u>	1,2	5,3,1	6
Decapoda	2	3,4	1,2,6 scavengers
<hr/>			
a. 1=lentic, erosional 2=lentic depositional	b. 1=clingers 2=sprawlers 3=climbers 4=swimmers 5=burrowers 6=net spinners 7=tube makers 8=case makers	c. 1=collectors 2=gatherers 3=scrapers 4=filterers 5=shredders 6=engulfers 7=piercers 8=parasitic	det=detritus dia=diatoms chi=Chironomidae eph=Ephemeroptera ani=animal

TABLE 4. PERCENT OF EACH TROPHIC GROUP FOUND IN THE MACROINVERTEBRATE COMMUNITIES OF BADGER CREEK STATION 6.2 ON THE DATES SAMPLED IN 1988

Trophic Group	JUNE				JULY	SEPTEMBER
	7	8	9	15	14	19
Scrapers	12	15	11	8	15	20
Collectors - Gatherers	45	56	53	52	50	44
Filterers	16	12	9	8	10	10
Engulfers (predators)	14	6	13	17	8	18
Piercers	1	1	1	5	5	3
Shredders	12	10	13	10	12	5

TABLE 5. PERCENT OF EACH TROPHIC GROUP FOUND IN THE MACROINVERTEBRATE  
COMMUNITIES OF BADGER CREEK STATION 9.3 ON THE DATES SAMPLED IN 1988

Trophic Group	JUNE				JULY	SEPTEMBER
	7	8	9	15	14	19
Scrapers	10	9	11	6	18	11
Collectors - Gatherers	53	50	51	61	45	44
Filterers	12	13	9	9	8	8
Engulfers (predators)	12	16	9	12	16	24
Piercers	5	3	9	3	5	5
Shredders	8	9	11	9	8	8

TABLE 6. PERCENT OF EACH TROPHIC GROUP FOUND IN THE MACROINVERTEBRATE COMMUNITIES OF BADGER CREEK STATION 12.1 ON THE DATES SAMPLED IN 1988

Trophic Group	JUNE				JULY	SEPTEMBER
	7	8	9	15	14	19
Scrapers	8	14	14	8	14	11
Collectors - Gatherers	50	42	46	56	54	45
Filterers	11	8	10	11	8	3
Engulfers (predators)	15	19	14	11	8	23
Piercers	3	6	2	3	5	3
Shredders	13	11	14	11	11	15

TABLE 7. OCCURRENCE OF MACROINVERTEBRATE TAXA -- BADGER CREEK STATION 6.2  
ON THE DATES SAMPLED. A PLUS (+) INDICATES PRESENCE, BLANK INDICATES ABSENCE

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	14	19
<u>Ephemeroptera</u>						
<u>Epeorus</u> sp.	+	+	+	+	+	+
<u>Cinygmula</u> sp.	+	+	+	+	+	+
<u>Heptagenia</u> sp.					+	
<u>Rhithrogena</u> sp.	+	+				+
<u>Ephemerella inermis</u>	+	+	+	+	+	+
<u>Ephemerella doddsi</u>	+		+		+	+
<u>Ephemerella spinifera</u>	+					
<u>Ephemerella coloradensis</u>	+	+	+	+		
<u>Ephemerella tibialis</u>	+	+	+	+	+	
<u>Ephemerella delantala</u>	+	+	+			
<u>Ephemerella teresa</u>	+	+	+	+		
<u>Ephemerella hecuba</u>					+	
<u>Paraleptophlebia</u> sp.	+	+		+	+	+
<u>Tricorythodes minutus</u>		+				+
<u>Ameletus</u> sp.	+			+	+	+
<u>Baetis</u> sp.	+	+	+	+	+	+
<u>Plecoptera</u>						
<u>Chloroperlidae</u>	+	+	+	+	+	+
<u>Skwala parallela</u>				+		+
<u>Megarcys</u>	+					
<u>Cultus</u> sp.						+
<u>Taenionema</u> sp.						+
<u>Isoperla</u> sp.			+	+	+	+
<u>Isogenoides</u>						+
<u>Zapada</u> sp.	+		+	+	+	
<u>Malenka</u>	+					
<u>Capniidae</u>						+
<u>Leuctridae</u>					+	
<u>Amphinemura</u>	+	+	+	+	+	+
<u>Podmosta</u> sp.			+			
<u>Perlidae</u>				+	+	+
<u>Perlodidae</u>					+	
<u>Perlinodes</u>				+	+	+
<u>Hesperoperla pacifica</u>	+			+		+
<u>Claassenia sabulosa</u>						+
<u>Calineuria</u>			+			
<u>Pteronarcella badia</u>	+					+
<u>Trichoptera</u>						
<u>Hydropsyche</u> sp.	+	+	+	+	+	+
<u>Cheumatopsyche</u> sp.	+	+	+	+	+	+
<u>Alisotrichia</u>						+
<u>Arctopsyche</u> sp.	+			+		
<u>Dicosmoecus</u>	+				+	

TABLE 7 - Continued

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	14	19
<u>Neophylax</u>	+	+	+	+		
<u>Micrasema</u> sp.	+	+	+	+		
<u>Amiocentrus</u>				+		
<u>Glossosoma</u> sp.	+	+	+	+	+	+
<u>Rhyacophila</u> sp.	+	+	+	+	+	+
<u>Ecclisomyia</u>		+				
<u>Limnephilidae</u>		+	+	+		
<u>Hesperophylax</u>				+	+	
<u>Manophylax</u>			+			
<u>Philopotamidae</u>	+					
<u>Hydrotilla</u>	+		+		+	
<u>Goera</u>			+			+
<u>Agraylea</u>					+	
Coleoptera						
Elmidae	+	+	+	+	+	+
Dytiscidae					+	
Diptera						
<u>Antocha monticola</u>	+	+	+	+	+	+
<u>Hexatoma</u> sp.	+	+	+	+	+	+
<u>Dicranota</u>					+	
<u>Glutops rossi</u>				+		
<u>Simuliidae</u>	+	+	+	+	+	+
<u>Chironomidae</u>	+	+	+	+	+	+
<u>Empididae</u>	+	+	+	+		+
<u>Ceratopogonidae</u>	+	+	+	+	+	
<u>Atherix</u>	+	+	+	+	+	+
<u>Tabanidae</u>	+			+		
<u>Maruina</u>	+	+	+			
Odonata						
<u>Gomphidae</u>			+	+		
<u>Ophiogomphus</u>				+		
<u>Coenagrionidae</u>						+
Ostracoda	+		+	+	+	+
Pelecypoda	+		+	+		
Oligochaeta	+	+	+	+	+	+
Hydracarina	+	+	+	+	+	+
Nematoda	+	+	+	+	+	+
Copepoda						+

TABLE 8. OCCURRENCE OF MACROINVERTEBRATE TAXA -- BADGER CREEK STATION 9.3  
ON THE DATES SAMPLED. A PLUS (+) INDICATES PRESENCE, BLANK INDICATES ABSENCE

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	14	19
<u>Ephemeroptera</u>						
<u>Epeorus</u> sp.	+	+	+	+	+	+
<u>Cinygmula</u> sp.	+	+	+	+	+	+
<u>Rhithrogena</u> sp.	+		+		+	
<u>Heptagenia</u> sp.					+	+
<u>Ephemerella inermis</u>	+	+	+	+	+	+
<u>Ephemerella doddsi</u>	+	+	+	+	+	+
<u>Ephemerella spinifera</u>					+	+
<u>Ephemerella coloradensis</u>	+	+	+	+		
<u>Ephemerella tibialis</u>	+	+	+	+	+	+
<u>Ephemerella delantala</u>		+			+	
<u>Ephemerella teresa</u>			+	+		
<u>Ephemerella hecuba</u>					+	
<u>Ephemerella heterocaudata</u>	+					
<u>Ephemerella orestes</u>	+					
<u>Paraleptophlebia</u> sp.	+	+	+	+	+	+
<u>Tricorythodes minutus</u>						+
<u>Ameletus</u> sp.	+	+	+	+	+	+
<u>Baetis</u> sp.	+	+	+	+	+	+
<u>Plecoptera</u>						
<u>Chloroperlidae</u>	+	+	+	+	+	+
<u>Skwala parallela</u>						+
<u>Hesperoperla pacifica</u>	+	+		+	+	+
<u>Megarcys</u>					+	
<u>Cultus</u> sp.					+	+
<u>Malenka</u>						+
<u>Zapada</u> sp.	+	+	+	+	+	+
<u>Perlidae</u>	+	+			+	
<u>Perlodidae</u>		+				
<u>Perlinodes</u>						+
<u>Amphinemura</u>	+	+	+	+	+	+
<u>Isoperla</u> sp.		+		+	+	+
<u>Calineuria</u>	+	+				+
<u>Pteronarcella badia</u>					+	
<u>Trichoptera</u>						
<u>Hydropsyche</u> sp.	+	+	+	+		+
<u>Cheumatopsyche</u> sp.	+					
<u>Alisotrichia</u>						+
<u>Dicosmoecus</u>			+			
<u>Oligophlebodes</u>	+					
<u>Neophylax</u>	+	+	+	+	+	
<u>Micrasema</u> sp.	+	+	+	+		
<u>Glossosoma</u> sp.	+	+			+	
<u>Rhyacophila</u> sp.	+	+	+	+	+	

TABLE 8 - Continued

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	14	19
<u>Ecclisomyia</u>			+			
<u>Polycentropus</u>						+
Limnephilidae		+	+			
<u>Hydroptila</u>					+	+
<u>Agraylea</u>					+	
Coleoptera						
Elmidae	+	+	+	+	+	+
Carabidae					+	
Diptera						
<u>Antocha monticola</u>	+	+	+	+	+	+
<u>Hexatoma</u> sp.	+		+	+	+	+
<u>Glutops rossi</u>	+		+		+	+
Simuliidae	+	+	+	+	+	+
Chironomidae	+	+	+	+	+	+
Empididae	+	+	+	+	+	
Ceratopogonidae	+	+	+	+	+	+
<u>Atherix</u>				+		
Tabanidae		+				
<u>Maruina</u>	+	+	+	+		
<u>Pericoma</u>	+					+
Ostracoda	+	+	+	+	+	+
Pelecypoda	+	+				
<u>Planaria</u> sp.	+	+		+		
Oligochaeta	+	+	+	+	+	+
Hydracarina	+	+	+	+	+	+
Nematoda	+	+	+		+	+
Copepoda	+	+	+			



TABLE 9. OCCURRENCE OF MACROINVERTEBRATE TAXA -- BADGER CREEK STATION 12.1  
ON THE DATES SAMPLED. A PLUS (+) INDICATES PRESENCE, BLANK INDICATES ABSENCE

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	14	19
<u>Ephemeroptera</u>						
<u>Epeorus</u> sp.	+	+	+	+	+	+
<u>Cinygmula</u> sp.	+	+	+	+	+	+
<u>Rhithrogena</u> sp.		+	+		+	
<u>Ephemerella inermis</u>	+	+	+	+	+	+
<u>Ephemerella doddsi</u>	+	+	+	+	+	+
<u>Ephemerella spinifera</u>						+
<u>Ephemerella coloradensis</u>	+	+	+	+		
<u>Ephemerella tibialis</u>	+	+	+	+	+	
<u>Ephemerella delantala</u>	+				+	
<u>Ephemerella teresa</u>	+			+	+	
<u>Ephemerella hecuba</u>						+
<u>Ephemerella margarita</u>						+
<u>Paraleptophlebia</u> sp.	+	+	+	+	+	+
<u>Ameletus</u> sp.	+	+	+	+	+	+
<u>Baetis</u> sp.	+	+	+	+	+	+
<u>Plecoptera</u>						
<u>Chloroperlidae</u>	+	+	+	+	+	+
<u>Skwala parallela</u>						+
<u>Hesperoperla pacifica</u>	+	+	+	+	+	
<u>Megarcys</u>	+	+				+
<u>Cultus</u> sp.			+		+	+
<u>Kogotus</u>	+		+			
<u>Visoka</u>	+	+	+	+	+	
<u>Zapada</u> sp.	+	+	+	+	+	+
<u>Malenka</u>			+			+
<u>Yoraperla</u>			+			
<u>Capniidae</u>						+
<u>Leuctridae</u>	+		+	+	+	
<u>Perlidae</u>	+	+		+		
<u>Perlinodes</u>						+
<u>Amphinemura</u>	+	+	+	+	+	+
<u>Isoperla</u> sp.			+	+	+	
<u>Calineuria</u>		+				
<u>Isoxenoides</u>		+				
<u>Trichoptera</u>						
<u>Hydropsyche</u> sp.	+	+	+	+	+	
<u>Glyphopsyche</u>			+			
<u>Cheumatopsyche</u> sp.	+					
<u>Alisotrichia</u>					+	+
<u>Micrasema</u> sp.	+	+	+	+	+	+
<u>Glossosoma</u> sp.	+	+		+	+	+
<u>Rhyacophila</u> sp.	+	+	+	+	+	+
<u>Psychomyia</u>						+

TABLE 9 - Continued

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	14	19
<u>Polycentropus</u>						+
Limnephilidae	+	+		+	+	
Lepidostomatidae	+					+
<u>Hesperophylax</u>					+	
<u>Hydroptila</u>			+		+	+
<u>Agraylea</u>					+	
Coleoptera						
Elmidae	+	+	+	+	+	+
Diptera						
<u>Antocha monticola</u>	+	+	+	+	+	+
<u>Hexatoma</u> sp.		+		+		+
<u>Dicranota</u>		+				+
<u>Glutops rossi</u>		+				
Simuliidae	+	+	+	+	+	
Chironomidae	+	+	+	+	+	+
Empididae	+		+	+	+	
Ceratopogonidae	+	+	+	+	+	+
<u>Dixa</u>					+	
<u>Atherix</u>		+	+	+		
Tabanidae	+					
<u>Maruina</u>	+			+		
<u>Pericoma</u>						+
Odonata					+	
<u>Planaria</u> sp.	+	+		+	+	
Ostracoda	+	+	+	+	+	+
Pelecypoda				+		
Oligochaeta	+	+	+	+	+	+
Nematoda	+	+	+	+		
Copepoda		+				+
Hydracarina	+	+	+	+	+	+
<u>Sialis</u>		+				
Decapoda						+

# TOTAL SAMPLE STATISTICS

STATION: 6.2

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	46	18740.	13484.	24015.	7694.75	18.36	41.06	3.0025	0.4573	50.	55.

## SPECIES TOLERANCE CODES

- = Clean water species
- | = Moderately tolerant species
- = Shredders - Depend upon deciduous vegetation from riparian areas)
- S = Sediment tolerant
- O = Organic enrichment tolerant
- Ch = Resistant to adverse chemistry
- C = Large stonefly species

## SPECIES ANALYSES

STATION: 6.2

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		387.36	2.588	21.	54.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		163.55	2.214	30.	66.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		51.65	1.713	21.	36.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	163.55	2.214	18.	40.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	137.73	2.139	48.	103.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	51.65	1.713	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	103.30	2.014	24.	48.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	SPINIFERA	68.86	1.838	24.	44.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		68.86	1.838	24.	44.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		17.22	1.236	48.	59.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		1962.62	3.293	72.	237.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	17.22	1.236	24.	30.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	103.30	2.014	24.	48.	
INSECTA	PLECOPTERA				17.22	1.236	48.	59.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			137.73	2.139	24.	51.	
INSECTA	PLECOPTERA	PERLODIDAE	MEGARCYS		17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	PTERONARCYIDAE	PTERONARCELLA	BADIA	17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		25.82	1.412	16.	23.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	8.61	0.935	18.	17.	
INSECTA	PLECOPTERA	NEMOURIDAE	MALENKA		17.22	1.236	36.	44.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		34.43	1.537	6.	9.	
INSECTA	TRICHOPTERA				25.82	1.412	72.	102.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		215.20	2.333	108.	252.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE		232.42	2.366	108.	256.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHE		17.22	1.236	18.	22.	
INSECTA	TRICHOPTERA	LIMNephilidae	DICOSMOECUS		34.43	1.537	24.	37.	
INSECTA	TRICHOPTERA	LIMNephilidae	NEOPHYLAX		51.65	1.713	24.	41.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		68.86	1.838	24.	44.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		34.43	1.537	18.	28.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		241.02	2.382	24.	57.	
INSECTA	TRICHOPTERA	PHILOPOTAMIDAE			17.22	1.236	24.	30.	
INSECTA	COLEOPTERA	ELMIDAE			2849.25	3.455	104.	359.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	197.98	2.297	24.	55.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		482.05	2.683	36.	97.	
INSECTA	DIPTERA	SIMULIIDAE			275.46	2.440	108.	264.	
INSECTA	DIPTERA	CHIRONOMIDAE			9038.40	3.956	108.	427.	
INSECTA	DIPTERA	EMPIDIDAE			77.47	1.889	95.	179.	
INSECTA	DIPTERA	CERATOPOGONIDAE			43.04	1.634	108.	176.	
INSECTA	DIPTERA	RHAGIONIDAE	ATHERIX		86.08	1.935	24.	46.	
INSECTA	DIPTERA	TABANIDAE			17.22	1.236	108.	133.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		120.51	2.081	36.	75.	
CRUSTACEA	OSTRACODA				17.22	1.236	108.	133.	
PELECYPODA					25.82	1.412	108.	152.	
OLIGOCHAETA					275.46	2.440	108.	264.	
ARACHNIDA	HYDRACARINA				327.10	2.515	98.	246.	
NEMATODA					395.97	2.598	108.	281.	
TOTALS					18739.62	4.273			3.10

# TOTAL SAMPLE STATISTICS

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	44	13717.	9223.	18211.	6555.09	21.37	47.79	2.8730	0.4747	53.	56.

## SPECIES ANALYSES

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		662.82	2.821	21.	59.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		17.22	1.236	30.	37.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		17.22	1.236	21.	26.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	43.04	1.634	18.	29.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	92.54	1.968	48.	94.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	178.62	2.252	2.	5.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	135.58	2.132	24.	51.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		32.28	1.509	24.	36.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		27.98	1.447	48.	69.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		798.39	2.902	72.	209.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	HETEROCAUDATA	10.78	1.032	24.	25.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	ORESTES	17.22	1.236	24.	30.	
INSECTA	PLECOPTERA				8.61	0.935	48.	45.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			204.44	2.311	24.	55.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		23.67	1.374	18.	22.	
INSECTA	PLECOPTERA	PERLIDAE	CALINEURIA		23.67	1.374	24.	33.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	40.89	1.612	18.	29.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		75.32	1.877	6.	11.	
INSECTA	PLECOPTERA	PERLIDAE			25.82	1.412	24.	34.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		118.36	2.073	108.	224.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE		6.46	0.810	108.	87.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	NEOPHYLAX		25.82	1.412	24.	34.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	OLIGOPHLEBODES		25.82	1.412	24.	34.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		79.62	1.901	24.	46.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		92.54	1.966	18.	35.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		8.61	0.935	24.	22.	
INSECTA	COLEOPTERA	ELMIDAE			1375.13	3.138	104.	326.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	458.22	2.659	24.	84.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		172.18	2.236	38.	80.	
INSECTA	DIPTERA	SIMULIIDAE			114.06	2.057	108.	222.	
INSECTA	DIPTERA	CHIRONOMIDAE			7265.15	3.861	108.	417.	
INSECTA	DIPTERA	EMPIDIDAE			27.98	1.447	95.	137.	
INSECTA	DIPTERA	CERATOPOGONIDAE			120.51	2.081	108.	225.	
INSECTA	DIPTERA	PSYCHODIDAE	PERICOMA		8.61	0.935	36.	34.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		19.37	1.287	36.	48.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	23.67	1.374	30.	41.	
INSECTA	DIPTERA	TIPULIDAE			6.46	0.810	72.	58.	
CRUSTACEA	COPEPODA				17.22	1.236	108.	133.	
CRUSTACEA	OSTRACODA				17.22	1.236	108.	133.	
PELECYPODA					8.61	0.935	108.	101.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		34.43	1.537	108.	168.	
OLIGOCHAETA					221.86	2.346	108.	253.	
ARACHNIDA	HYDRACARINA				905.99	2.957	98.	290.	
NEMATODA					129.12	2.111	108.	228.	
TOTALS					13716.85	4.137			2.30

## TOTAL SAMPLE STATISTICS

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT) LL	UL	STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
* NUMBERS DATA											
5	42	5219.	3183.	7254.	2969.06	25.44	56.89	3.6596	0.3221	57.	61.

## SPECIES ANALYSES

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		258.24	2.412	21.	51.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGULA		47.34	1.675	30.	50.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	43.04	1.634	18.	29.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	8.61	0.935	48.	45.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	34.43	1.537	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	17.22	1.236	24.	30.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		187.22	2.272	24.	55.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		75.32	1.877	48.	90.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		361.54	2.558	72.	184.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	8.61	0.935	24.	22.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	8.61	0.935	24.	22.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			148.49	2.172	24.	52.	
INSECTA	PLECOPTERA	PERLODIDAE	MEGARCYS		17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	PERLODIDAE	KOGOTUS		17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		18.61	0.935	18.	15.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	10.76	1.032	18.	19.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		16.46	0.810	6.	5.	
INSECTA	PLECOPTERA	LEUCTRIDAE			30.13	1.479	18.	27.	
INSECTA	PLECOPTERA	PERLIDAE			17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		8.61	0.935	108.	101.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		77.47	1.889	108.	204.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE		8.61	0.935	108.	101.	
INSECTA	TRICHOPTERA	LIMNAPHILIDAE			8.61	0.935	108.	101.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		36.58	1.563	24.	38.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		43.04	1.634	18.	29.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		8.61	0.935	24.	22.	
INSECTA	TRICHOPTERA	LEPIDOSTOMATIDAE			6.46	0.810	18.	15.	
INSECTA	COLEOPTERA	ELMIDAE			574.58	2.759	104.	287.	
INSECTA	DIPTERA				8.61	0.935	108.	101.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	79.62	1.901	24.	46.	
INSECTA	DIPTERA	SIMULIIDAE			43.04	1.634	108.	176.	
INSECTA	DIPTERA	CHIRONOMIDAE			1816.29	3.259	108.	352.	
INSECTA	DIPTERA	EMPIDIDAE			19.37	1.287	95.	122.	
INSECTA	DIPTERA	CERATOPOGONIDAE			68.86	1.838	108.	199.	
INSECTA	DIPTERA	TIPULIDAE			12.91	1.111	72.	80.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		64.56	1.810	36.	65.	
INSECTA	DIPTERA	TABANIDAE			12.91	1.111	108.	120.	
CRUSTACEA	OSTRACODA				344.32	2.537	108.	274.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		17.22	1.236	108.	133.	
OLIGOCHAETA					249.83	2.397	108.	259.	
ARACHNIDA	HYDRACARINA				367.99	2.566	98.	251.	
NEMATODA					34.43	1.537	108.	168.	
TOTALS					5218.80	3.718			0.63



## TOTAL SAMPLE STATISTICS

STATION: 6.2

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	39	23747.	19436.	28059.	6288.44	11.84	26.48	2.6154	0.5057	59.	62.

## SPECIES ANALYSES

STATION: 8.2

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		505.72	2.704	21.	57.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		94.69	1.976	30.	59.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		17.22	1.236	21.	26.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	154.94	2.190	18.	39.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	17.22	1.236	48.	59.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	189.38	2.277	24.	55.	
INSECTA	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	MINUTUS	17.22	1.236	108.	133.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		25.82	1.412	24.	34.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		1962.62	3.293	72.	237.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	344.32	2.537	24.	61.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	17.22	1.236	24.	30.	
INSECTA	PLECOPTERA				34.43	1.537	48.	74.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			301.28	2.479	24.	59.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		34.43	1.537	6.	9.	
INSECTA	TRICHOPTERA	LIMNephilidae	ECCLISOMYIA		34.43	1.537	24.	37.	
INSECTA	TRICHOPTERA				94.69	1.976	72.	142.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		352.93	2.548	108.	275.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE		86.08	1.935	108.	209.	
INSECTA	TRICHOPTERA	LIMNephilidae			17.22	1.236	108.	133.	
INSECTA	TRICHOPTERA	LIMNephilidae	MANOPHYLAX		43.04	1.634	72.	118.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		86.08	1.935	24.	46.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		86.08	1.935	18.	35.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		68.86	1.838	24.	44.	
INSECTA	TRICHOPTERA	LIMNephilidae	NEOPHYLAX		68.86	1.838	24.	44.	
INSECTA	COLEOPTERA	ELMIDAE			2496.32	3.397	104.	353.	
INSECTA	DIPTERA				17.22	1.236	108.	133.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	352.93	2.548	24.	61.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		120.51	2.081	36.	75.	
INSECTA	DIPTERA	SIMULIIDAE			232.42	2.366	108.	256.	
INSECTA	DIPTERA	CHIRONOMIDAE			13712.54	4.137	108.	447.	
INSECTA	DIPTERA	EMPIDIDAE			86.08	1.935	95.	184.	
INSECTA	DIPTERA	CERATOPOGONIDAE			51.65	1.713	108.	185.	
INSECTA	DIPTERA	RHAGIONIDAE	ATHERIX		86.08	1.935	24.	46.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		103.30	2.014	36.	73.	
INSECTA	DIPTERA	TIPULIDAE			51.65	1.713	72.	123.	
PELECYPODA					86.08	1.935	108.	209.	
OLIGOCHAETA					430.40	2.634	108.	284.	
ARACHNIDA	HYDRACARINA				998.53	2.999	98.	294.	
NEMATODA					266.85	2.426	108.	262.	
TOTALS					23747.32	4.378			2.70

# TOTAL SAMPLE STATISTICS

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	41	11782.	7642.	15923.	6039.20	22.92	51.28	2.7546	0.4870	58.	64.

## SPECIES ANALYSES

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA				45.19	1.655	64.	108.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		290.52	2.463	21.	52.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYMULA		40.89	1.612	30.	48.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	17.22	1.238	18.	22.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	86.08	1.935	48.	93.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	17.22	1.238	2.	2.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	94.69	1.978	24.	47.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		111.90	2.049	24.	49.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		189.38	2.277	48.	109.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		439.01	2.642	72.	190.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	8.61	0.935	24.	22.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			204.44	2.311	24.	55.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		8.61	0.935	48.	45.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		43.04	1.634	18.	26.	
INSECTA	PLECOPTERA	PERLIDAE	CALINEURIA		8.48	0.810	24.	19.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	8.61	0.935	18.	17.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		34.43	1.537	8.	9.	
INSECTA	PLECOPTERA	PERLODIDAE			17.22	1.238	48.	59.	
INSECTA	PLECOPTERA	PERLIDAE			15.08	1.178	24.	28.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		25.82	1.412	108.	152.	
INSECTA	TRICHOPTERA	LIMNephilidae			94.69	1.978	108.	213.	
INSECTA	TRICHOPTERA	LIMNephilidae	NEOPHYLAX		10.78	1.032	24.	25.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		77.47	1.889	24.	45.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		43.04	1.634	18.	29.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		10.78	1.032	24.	25.	
INSECTA	COLEOPTERA	ELMIDAE			1345.00	3.129	104.	325.	
INSECTA	DIPTERA				34.43	1.537	108.	166.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	137.73	2.139	24.	51.	
INSECTA	DIPTERA	SIMULIIDAE			109.75	2.040	108.	220.	
INSECTA	DIPTERA	CHIRONOMIDAE			6238.65	3.795	108.	410.	
INSECTA	DIPTERA	EMPIDIDAE			34.43	1.537	95.	146.	
INSECTA	DIPTERA	CERATOPOGONIDAE			103.30	2.014	108.	218.	
INSECTA	DIPTERA	TIPULIDAE			25.82	1.412	72.	102.	
INSECTA	DIPTERA	TABANIDAE			17.22	1.238	108.	133.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		8.61	0.935	36.	34.	
CRUSTACEA	COPEPODA				34.43	1.537	108.	166.	
CRUSTACEA	OSTRACODA				68.88	1.838	108.	199.	
PELECYPODA					34.43	1.537	108.	166.	
OLIGOCHAETA					217.35	2.337	108.	252.	
ARACHNIDA	HYDRACARINA				1413.86	3.150	98.	309.	
NEMATODA					17.22	1.238	108.	133.	
TOTALS					11782.20	4.071			1.40

# TOTAL SAMPLE STATISTICS

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 08 08 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	43	8522.	6055.	10989.	3597.93	18.88	42.22	3.2812	0.3968	54.	58.

## SPECIES ANALYSES

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		94.69	1.976	21.	42.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		142.03	2.152	30.	65.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		25.82	1.412	21.	30.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	38.74	1.588	18.	29.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	98.99	1.996	48.	96.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	43.04	1.634	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	77.47	1.889	24.	45.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		348.62	2.542	24.	61.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		21.52	1.333	48.	64.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		525.09	2.720	72.	196.	
INSECTA	PLECOPTERA				8.61	0.935	48.	45.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			146.34	2.165	24.	52.	
INSECTA	PLECOPTERA	PERLODIDAE	MEGARCYS		12.91	1.111	24.	27.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		17.22	1.236	16.	20.	
INSECTA	PLECOPTERA	PERLIDAE	CALINEURIA		8.61	0.935	24.	22.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	30.13	1.479	18.	27.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		8.61	0.935	6.	6.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOGENOIDES		17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		25.82	1.412	108.	152.	
INSECTA	PLECOPTERA	PERLIDAE			8.61	0.935	24.	22.	
INSECTA	TRICHOPTERA				8.61	0.935	72.	67.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		137.73	2.139	108.	231.	
INSECTA	TRICHOPTERA	LIMNephilidae			4.30	0.634	108.	68.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		68.86	1.838	24.	44.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		68.86	1.838	18.	33.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		17.22	1.236	24.	30.	
INSECTA	COLEOPTERA	ELMIDAE			1631.22	3.213	104.	334.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	142.03	2.152	24.	52.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		8.61	0.935	24.	22.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		4.30	0.634	36.	23.	
INSECTA	DIPTERA	SIMULIIDAE			4.30	0.634	108.	68.	
INSECTA	DIPTERA	CHIRONOMIDAE			2892.29	3.461	108.	374.	
INSECTA	DIPTERA	CERATOPOGONIDAE			25.82	1.412	108.	152.	
INSECTA	DIPTERA	RHAGIONIDAE	ATHERIX		8.61	0.935	24.	22.	
INSECTA	DIPTERA	TIPULIDAE			8.61	0.935	72.	67.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	8.61	0.935	30.	28.	
INSECTA	MEGALOPTERA	SIALIDAE	SIALIS		8.61	0.935	72.	67.	
CRUSTACEA	COPEPODA				8.61	0.935	108.	101.	
CRUSTACEA	OSTRACODA				219.50	2.341	108.	253.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		25.82	1.412	108.	152.	
OLIGOCHAETA					331.41	2.520	108.	272.	
ARACHNIDA	HYDRACARINA				1179.30	3.072	98.	301.	
NEMATODA					8.61	0.935	108.	101.	
TOTALS					8521.92	3.931			1.30

# TOTAL SAMPLE STATISTICS

STATION: 8.2

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 09 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	42	22357.	14786.	29928.	11042.93	22.09	49.39	2.6145	0.5157	57.	61.

## SPECIES ANALYSES

STATION: 8.2

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 09 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		585.34	2.767	21.	58.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		79.62	1.901	30.	57.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	68.86	1.838	18.	33.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	161.40	2.208	48.	108.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	17.22	1.236	2.	2.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	68.86	1.838	24.	44.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		1900.22	3.279	72.	238.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	92.54	1.966	24.	47.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	34.43	1.537	24.	37.	
INSECTA	PLECOPTERA				17.22	1.236	48.	59.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			137.73	2.139	24.	51.	
INSECTA	PLECOPTERA	NEMOURIDAE	PODMOSTA		40.89	1.612	12.	19.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		17.22	1.236	48.	59.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		40.89	1.612	18.	26.	
INSECTA	PLECOPTERA	PERLIDAE	CALINEURIA		51.65	1.713	24.	41.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		34.43	1.537	8.	9.	
INSECTA	TRICHOPTERA				27.98	1.447	72.	104.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		355.08	2.550	108.	275.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE		131.27	2.118	108.	229.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE			17.22	1.236	108.	133.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	NEOPHYLAX		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		40.89	1.612	24.	39.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		40.89	1.612	18.	29.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		51.65	1.713	24.	41.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		34.43	1.537	108.	168.	
INSECTA	COLEOPTERA	ELMIDAE			4103.86	3.613	104.	378.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	GOERA		8.46	0.810	72.	58.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	NEOPHYLAX		23.67	1.374	24.	33.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	234.57	2.370	24.	57.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		131.27	2.118	36.	78.	
INSECTA	DIPTERA	SIMULIIDAE			137.73	2.139	108.	231.	
INSECTA	DIPTERA	CHIRONOMIDAE			11403.45	4.057	108.	438.	
INSECTA	DIPTERA	EMPIDIDAE			34.43	1.537	95.	148.	
INSECTA	DIPTERA	CERATOPOGONIDAE			68.86	1.838	108.	199.	
INSECTA	DIPTERA	RHAGIONIDAE	ATHERIX		88.08	1.935	24.	46.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		17.22	1.236	36.	44.	
INSECTA	ODONATA	GOMPHIDAE			17.22	1.236	108.	133.	
CRUSTACEA	OSTRACODA				23.67	1.374	108.	148.	
PELECYPODA					23.67	1.374	108.	148.	
OLIGOCHAETA					206.59	2.315	108.	250.	
ARACHNIDA	HYDRACARINA				1508.55	3.179	98.	311.	
NEMATODA					264.70	2.423	108.	262.	
TOTALS					22357.13	4.349			2.90



## TOTAL SAMPLE STATISTICS

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 09 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	39	10874.	7733.	14015.	4582.02	18.84	42.14	2.9910	0.4346	56.	60.

## SPECIES ANALYSES

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 09 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		654.21	2.816	21.	59.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		17.22	1.236	30.	37.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		25.82	1.412	21.	30.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	58.10	1.764	18.	32.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	312.04	2.494	48.	120.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	51.65	1.713	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	49.50	1.695	24.	41.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		163.55	2.214	24.	53.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		204.44	2.311	48.	111.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		522.94	2.718	72.	196.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	17.22	1.236	24.	30.	
INSECTA	PLECOPTERA				40.89	1.612	48.	77.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			60.26	1.780	24.	43.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		8.61	0.935	16.	15.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		77.47	1.889	6.	11.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		51.65	1.713	36.	62.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		36.58	1.563	108.	169.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE			27.98	1.447	108.	156.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	DICOSMOECUS		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		58.10	1.764	24.	42.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		90.38	1.956	18.	35.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	ECCLISOMYIA		4.30	0.634	24.	15.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	NEOPHYLAX		25.82	1.412	24.	34.	
INSECTA	COLEOPTERA	ELMIDAE			1022.20	3.010	104.	313.	
INSECTA	DIPTERA				43.04	1.634	108.	176.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	170.01	2.230	24.	54.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		66.71	1.824	36.	66.	
INSECTA	DIPTERA	SIMULIIDAE			88.23	1.946	108.	210.	
INSECTA	DIPTERA	CHIRONOMIDAE			5474.69	3.738	108.	404.	
INSECTA	DIPTERA	EMPIDIDAE			12.91	1.111	95.	106.	
INSECTA	DIPTERA	CERATOPOGONIDAE			83.93	1.924	108.	208.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	17.22	1.236	30.	37.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		8.46	0.810	36.	29.	
CRUSTACEA	COPEPODA				23.67	1.374	108.	148.	
CRUSTACEA	OSTRACODA				45.19	1.655	108.	179.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		23.67	1.374	108.	148.	
OLIGOCHAETA					363.69	2.561	108.	277.	
ARACHNIDA	HYDRACARINA				828.52	2.918	98.	286.	
NEMATODA					27.98	1.447	108.	156.	
TOTALS					10874.06	4.036			0.73

## TOTAL SAMPLE STATISTICS

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 09 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	40	4980.	4131.	5828.	1237.60	11.11	24.85	3.4873	0.3460	55.	60.

## SPECIES ANALYSES

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 09 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		217.35	2.337	21.	49.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		43.04	1.634	30.	49.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		30.13	1.479	21.	31.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	8.61	0.935	18.	17.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	12.91	1.111	48.	53.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	86.08	1.935	2.	4.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	55.95	1.748	24.	42.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		243.18	2.386	24.	57.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		34.43	1.537	48.	74.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		413.18	2.616	72.	188.	
INSECTA	PLECOPTERA				4.30	0.634	48.	30.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			120.51	2.081	24.	50.	
INSECTA	PLECOPTERA	PERLODIDAE	KOGOTUS		4.30	0.634	18.	11.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		10.78	1.032	48.	50.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		4.30	0.634	12.	8.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		4.30	0.634	18.	10.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	NEMOURIDAE	MALENKA		8.48	0.810	36.	29.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		12.91	1.111	6.	7.	
INSECTA	PLECOPTERA	PELTOPERLIDAE	YORAPERLA		8.48	0.810	24.	19.	
INSECTA	PLECOPTERA	LEUCTRIDAE			10.78	1.032	18.	19.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		25.82	1.412	108.	152.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		94.69	1.976	108.	213.	
INSECTA	TRICHOPTERA	LIMNAPHILIDAE	GLYPHOPSYCHE		8.61	0.935	72.	67.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		23.67	1.374	24.	33.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		27.98	1.447	18.	26.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		4.30	0.634	108.	68.	
INSECTA	COLEOPTERA	ELMIDAE			337.86	2.529	104.	263.	
INSECTA	DIPTERA				4.30	0.634	108.	68.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	60.26	1.780	24.	43.	
INSECTA	DIPTERA	SIMULIIDAE			23.67	1.374	108.	148.	
INSECTA	DIPTERA	CHIRONOMIDAE			1663.50	3.221	108.	348.	
INSECTA	DIPTERA	EMPIDIDAE			12.91	1.111	95.	106.	
INSECTA	DIPTERA	CERATOPOGONIDAE			17.22	1.236	108.	133.	
INSECTA	DIPTERA	RHAGIONIDAE	ATHERIX		8.61	0.935	24.	22.	
INSECTA	DIPTERA	TIPULIDAE			8.61	0.935	72.	67.	
CRUSTACEA	OSTRACODA				213.05	2.328	108.	251.	
OLIGOCHAETA					322.80	2.509	108.	271.	
ARACHNIDA	HYDRACARINA				781.81	2.882	98.	282.	
NEMATODA					12.91	1.111	108.	120.	
TOTALS					4979.73	3.697			0.47

# TOTAL SAMPLE STATISTICS

STATION: 6.2

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	46	13112.	10336.	15888.	4048.70	13.81	30.88	3.0849	0.4421	61.	62.

## SPECIES ANALYSES

STATION: 6.2

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		466.98	2.669	21.	56.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		60.26	1.780	30.	53.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	73.17	1.864	18.	34.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	94.89	1.976	48.	95.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	241.02	2.382	24.	57.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		51.65	1.713	24.	41.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		34.43	1.537	48.	74.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		2324.16	3.366	72.	242.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	180.77	2.257	24.	54.	
INSECTA	PLECOPTERA				10.76	1.032	48.	50.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			111.90	2.049	24.	49.	
INSECTA	PLECOPTERA	PERLODIDAE	SKWALA	PARALLELA	34.43	1.537	18.	28.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		68.86	1.838	48.	88.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		135.58	2.132	16.	34.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	49.50	1.695	18.	31.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		17.22	1.236	6.	7.	
INSECTA	PLECOPTERA	PERLIDAE			17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA				17.22	1.236	72.	89.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		241.02	2.382	108.	257.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE		197.98	2.297	108.	248.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHE		6.46	0.810	18.	15.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE			58.10	1.764	108.	191.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	HESPEROPHYLAX		17.22	1.236	108.	133.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	AMIOCENTRUS		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		27.98	1.447	24.	35.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		172.16	2.236	18.	40.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		40.89	1.612	24.	39.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	NEOPHYLAX		43.04	1.634	24.	39.	
INSECTA	COLEOPTERA	ELMIDAE			1351.46	3.131	104.	326.	
INSECTA	ODONATA	GOMPHIDAE			17.22	1.236	108.	133.	
INSECTA	ODONATA	GOMPHIDAE	OPHIOGOMPHUS		17.22	1.236	108.	133.	
INSECTA	DIPTERA				8.61	0.935	108.	101.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	128.97	2.104	24.	50.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		51.65	1.713	36.	62.	
INSECTA	DIPTERA	SIMULIIDAE			105.45	2.023	108.	218.	
INSECTA	DIPTERA	CHIRONOMIDAE			5846.98	3.767	108.	407.	
INSECTA	DIPTERA	EMPIDIDAE			43.04	1.634	96.	155.	
INSECTA	DIPTERA	CERATOPOGONIDAE			25.82	1.412	108.	152.	
INSECTA	DIPTERA	TABANIDAE			8.61	0.935	108.	101.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	17.22	1.236	30.	37.	
INSECTA	DIPTERA	TIPULIDAE			51.65	1.713	72.	123.	
CRUSTACEA	OSTRACODA				17.22	1.236	108.	133.	
PELECYPODA					34.43	1.537	108.	166.	
OLIGOCHAETA					154.94	2.190	108.	237.	
ARACHNIDA	HYDRACARINA				406.73	2.609	98.	256.	
NEMATODA					15.06	1.178	108.	127.	
TOTALS					13112.14	4.118			2.00

## TOTAL SAMPLE STATISTICS

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	34	14117.	10912.	17322.	4674.95	14.81	33.12	2.8964	0.4310	53.	57.

## SPECIES ANALYSES

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA				17.22	1.236	64.	79.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		593.95	2.774	21.	58.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		34.43	1.537	30.	46.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	111.90	2.049	18.	37.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	68.86	1.838	48.	88.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	146.34	2.165	2.	4.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	197.98	2.297	24.	55.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		180.77	2.257	24.	54.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		77.47	1.889	48.	91.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		880.80	2.935	72.	211.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	25.82	1.412	24.	34.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			60.26	1.780	24.	43.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		8.61	0.935	48.	45.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		68.86	1.838	16.	29.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		51.65	1.713	6.	10.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		154.94	2.190	108.	237.	
INSECTA	TRICHOPTERA	LIMNAPHILIDAE	NEOPHYLAX		94.69	1.976	24.	47.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		258.24	2.412	24.	58.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		17.22	1.236	18.	22.	
INSECTA	COLEOPTERA	ELMIDAE			1308.42	3.117	104.	324.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	258.24	2.412	24.	58.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		34.43	1.537	36.	55.	
INSECTA	DIPTERA	SIMULIIDAE			120.51	2.081	108.	225.	
INSECTA	DIPTERA	CHIRONOMIDAE			7316.80	3.864	108.	417.	
INSECTA	DIPTERA	EMPIDIDAE			25.82	1.412	95.	134.	
INSECTA	DIPTERA	CERATOPOGONIDAE			146.34	2.165	108.	234.	
INSECTA	DIPTERA	RHAGIONIDAE	ATHERIX		17.22	1.236	24.	30.	
INSECTA	DIPTERA	TIPULIDAE			439.01	2.642	72.	190.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		60.26	1.780	36.	64.	
CRUSTACEA	OSTRACODA				34.43	1.537	108.	166.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		17.22	1.236	108.	133.	
OLIGOCHAETA					180.77	2.257	108.	244.	
ARACHNIDA	HYDRACARINA				1110.43	3.045	98.	298.	
TOTALS					14117.12	4.150			1.30



# TOTAL SAMPLE STATISTICS

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	39	7706.	2987.	12426.	6883.61	39.95	89.32	3.3171	0.3740	56.	61.

## SPECIES ANALYSES

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		305.58	2.485	21.	52.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		17.22	1.236	30.	37.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	30.13	1.479	18.	27.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	17.22	1.236	48.	59.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	47.34	1.675	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	62.41	1.795	24.	43.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		411.03	2.614	24.	63.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		51.65	1.713	48.	82.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		251.78	2.401	72.	173.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	4.30	0.634	24.	15.	
INSECTA	PLECOPTERA				<del>4.30</del>	<del>0.634</del>	48.	30.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			167.86	2.225	24.	53.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		17.22	1.236	48.	59.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		17.22	1.236	16.	20.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	21.52	1.333	18.	24.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		12.91	1.111	6.	7.	
INSECTA	PLECOPTERA	LEUCTRIDAE			4.30	0.634	18.	11.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		107.60	2.032	108.	219.	
INSECTA	PLECOPTERA	PERLIDAE			4.30	0.634	24.	15.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		277.61	2.443	108.	264.	
INSECTA	TRICHOPTERA	LIMNAPHILIDAE			12.91	1.111	108.	120.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		45.19	1.655	24.	40.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		90.38	1.956	18.	35.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		34.43	1.537	24.	37.	
INSECTA	COLEOPTERA	ELMIDAE			587.50	2.769	104.	288.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	157.10	2.198	24.	53.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		17.22	1.236	36.	44.	
INSECTA	DIPTERA	SIMULIIDAE			60.26	1.780	108.	192.	
INSECTA	DIPTERA	CHIRONOMIDAE			2997.74	3.477	108.	375.	
INSECTA	DIPTERA	EMPIDIDAE			8.61	0.935	95.	89.	
INSECTA	DIPTERA	CERATOPOGONIDAE			12.91	1.111	108.	120.	
INSECTA	DIPTERA	RHAGIONIDAE	ATHERIX		4.30	0.634	24.	15.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		17.22	1.236	36.	44.	
CRUSTACEA	OSTRACODA				578.89	2.763	108.	298.	
PELECYPODA					17.22	1.236	108.	133.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		34.43	1.537	108.	166.	
OLIGOCHAETA					96.84	1.986	108.	214.	
ARACHNIDA	HYDRACARINA				1095.37	3.040	98.	298.	
NEMATODA					4.30	0.634	108.	68.	
TOTALS					7706.31	3.887			1.00

# TOTAL SAMPLE STATISTICS

STATION: 6,8

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 07 14 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	43	17887.	14573.	21202.	4834.83	12.09	27.03	2.9510	0.4570	59.	61.

## SPECIES ANALYSES

STATION: 8.0

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 07 14 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		180.77	2.257	21.	47.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		671.42	2.827	30.	85.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	HEPTAGENIA		34.43	1.537	54.	83.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	189.38	2.277	48.	109.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	17.22	1.236	2.	2.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	34.43	1.537	24.	37.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		206.59	2.315	24.	56.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		17.22	1.236	48.	59.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		834.98	2.922	72.	210.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	HECUBA	25.82	1.412	48.	88.	
INSECTA	PLECOPTERA				34.43	1.537	48.	74.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			163.55	2.214	24.	53.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		86.08	1.935	48.	93.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		439.01	2.642	16.	42.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		137.73	2.139	6.	13.	
INSECTA	PLECOPTERA	LEUCTRIDAE			17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	PERLODIDAE	PERLINODES		94.69	1.976	48.	95.	
INSECTA	PLECOPTERA	PERLODIDAE			34.43	1.537	48.	74.	
INSECTA	PLECOPTERA	PERLIDAE			34.43	1.537	24.	37.	
INSECTA	TRICHOPTERA				17.22	1.236	72.	89.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		25.82	1.412	108.	152.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE		103.30	2.014	108.	218.	
INSECTA	TRICHOPTERA	LIMNAPHILIDAE	HESPEROPHYLAX		34.43	1.537	108.	168.	
INSECTA	TRICHOPTERA	LIMNAPHILIDAE	DICOSMOECUS		34.43	1.537	24.	37.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		120.51	2.081	18.	37.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		43.04	1.634	24.	39.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		68.86	1.838	108.	199.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	AGRAYLEA		68.86	1.838	108.	199.	
INSECTA	COLEOPTERA	ELMIDAE			4487.55	3.650	104.	380.	
INSECTA	COLEOPTERA	DYTISCIDAE			17.22	1.236	72.	89.	
INSECTA	DIPTERA				17.22	1.236	108.	133.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	232.42	2.366	24.	57.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		8.61	0.935	24.	22.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		8.61	0.935	36.	34.	
INSECTA	DIPTERA	SIMULIIDAE			17.22	1.236	108.	133.	
INSECTA	DIPTERA	CHIRONOMIDAE			7325.41	3.865	108.	417.	
INSECTA	DIPTERA	CERATOPOGONIDAE			43.04	1.634	108.	176.	
INSECTA	DIPTERA	RHAGIONIDAE	ATHERIX		25.82	1.412	24.	34.	
INSECTA	DIPTERA	TIPULIDAE			34.43	1.537	72.	111.	
CRUSTACEA	OSTRACODA				17.22	1.236	108.	133.	
OLIGOCHAETA					439.01	2.642	108.	285.	
ARACHNIDA	HYDRACARINA				1342.85	3.128	98.	307.	
NEMATODA					120.51	2.081	108.	225.	
TOTALS					17887.42	4.253			2.60

# TOTAL SAMPLE STATISTICS

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 07 14 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	42	24374.	22013.	26734.	3443.49	6.32	14.13	3.0690	0.4313	51.	58.

## SPECIES ANALYSES

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 07 14 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		68.86	1.838	21.	39.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		86.08	1.935	30.	58.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		51.65	1.713	21.	36.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	HEPTAGENIA		111.90	2.049	54.	111.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	51.65	1.713	48.	82.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	77.47	1.889	2.	4.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	51.65	1.713	24.	41.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	SPINIFERA	8.61	0.935	24.	22.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		533.70	2.727	24.	85.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		163.55	2.214	48.	106.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		2913.81	3.464	72.	249.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	HECUBA	292.87	2.466	48.	118.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	25.82	1.412	24.	34.	
INSECTA	PLECOPTERA				215.20	2.333	48.	112.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			275.46	2.440	24.	59.	
INSECTA	PLECOPTERA	PERLODIDAE	MEGARCYS		17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		172.16	2.236	48.	107.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		17.22	1.236	12.	15.	
INSECTA	PLECOPTERA	PTERONARCYIDAE	PTERONARCELLA	BADIA	17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		1007.14	3.003	16.	48.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	51.65	1.713	18.	31.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		43.04	1.634	6.	10.	
INSECTA	PLECOPTERA	PERLIDAE			68.86	1.838	24.	44.	
INSECTA	TRICHOPTERA	LIMNephilidae	NEOPHYLAX		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		34.43	1.537	18.	28.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		34.43	1.537	24.	37.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		94.69	1.976	108.	213.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	AGRAYLEA		43.04	1.634	108.	176.	
INSECTA	COLEOPTERA	ELMIDAE			4088.80	3.612	104.	376.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	154.94	2.190	24.	53.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		68.86	1.838	36.	66.	
INSECTA	DIPTERA	SIMULIIDAE			43.04	1.634	108.	176.	
INSECTA	DIPTERA	CHIRONOMIDAE			9085.74	3.958	108.	428.	
INSECTA	DIPTERA	EMPIDIDAE			17.22	1.236	95.	117.	
INSECTA	DIPTERA	CERATOPOGONIDAE			137.73	2.139	108.	231.	
INSECTA	DIPTERA	TIPULIDAE			137.73	2.139	72.	154.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	25.82	1.412	30.	42.	
CRUSTACEA	OSTRACODA				43.04	1.634	108.	176.	
OLIGOCHAETA					275.46	2.440	108.	264.	
ARACHNIDA	HYDRACARINA				3395.86	3.531	98.	346.	
NEMATODA					292.67	2.466	108.	268.	
INSECTA	COLEOPTERA	CARABIDAE			60.26	1.780	0.	0.	
TOTALS					24373.55	4.387			3.60

## TOTAL SAMPLE STATISTICS

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 07 14 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT) LL	UL	STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
* NUMBERS DATA											
5	41	24055.	15826.	32285.	12003.71	22.32	49.90	3.3583	0.3736	61.	61.

## SPECIES ANALYSES

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 07 14 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		249.63	2.397	21.	50.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		723.07	2.859	30.	86.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		23.67	1.374	21.	29.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	60.26	1.780	48.	85.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	370.14	2.568	2.	5.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	83.93	1.924	24.	46.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		443.31	2.647	24.	64.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		68.86	1.838	48.	88.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		4318.91	3.635	72.	262.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	34.43	1.537	24.	37.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	17.22	1.236	24.	30.	
INSECTA	PLECOPTERA				344.32	2.537	48.	122.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			819.91	2.914	24.	70.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		86.08	1.935	48.	93.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		34.43	1.537	12.	18.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		1032.96	3.014	16.	48.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	25.82	1.412	18.	25.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		79.62	1.901	6.	11.	
INSECTA	PLECOPTERA	LEUCTRIDAE			38.74	1.588	18.	29.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		51.65	1.713	108.	185.	
INSECTA	TRICHOPTERA				34.43	1.537	72.	111.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		86.08	1.935	108.	209.	
INSECTA	TRICHOPTERA	LIMNAPHILIDAE			17.22	1.236	108.	133.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		32.28	1.509	24.	36.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		137.73	2.139	18.	39.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		43.04	1.634	24.	39.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		6.46	0.810	108.	87.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	ALISOTRICHIA		62.41	1.795	108.	194.	
INSECTA	COLEOPTERA	ELMIDAE			2507.08	3.399	104.	354.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	AGRAYLEA		34.43	1.537	108.	166.	
INSECTA	ODONATA				8.48	0.810	90.	73.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	128.97	2.104	24.	50.	
INSECTA	DIPTERA	SIMULIIDAE			421.79	2.625	108.	284.	
INSECTA	DIPTERA	CHIRONOMIDAE			7833.28	3.894	108.	421.	
INSECTA	DIPTERA	EMPIDIDAE			17.22	1.236	95.	117.	
INSECTA	DIPTERA	CERATOPOGONIDAE			51.65	1.713	108.	185.	
INSECTA	DIPTERA	DIXIDAE			51.65	1.713	108.	185.	
CRUSTACEA	OSTRACODA				1039.42	3.017	108.	326.	
TURBELLARIA	TRICLADIDAE	PLANARIIDAE	PLANARIA		17.22	1.236	108.	133.	
OLIGOCHAETA					292.67	2.466	108.	266.	
ARACHNIDA	HYDRACARINA				2330.62	3.367	98.	330.	
TOTALS					24055.06	4.381			2.20



# TOTAL SAMPLE STATISTICS

STATION: 8.2

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 09 19 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	45	29517.	24304.	34730.	7604.23	11.52	25.76	3.7580	0.3160	59.	60.

## SPECIES ANALYSES

STATION: 6.2

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 09 19 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		4252.35	3.629	21.	76.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		361.54	2.558	30.	77.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		1471.97	3.168	21.	67.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	3667.01	3.564	48.	171.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	17.22	1.236	2.	2.	
INSECTA	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	MINUTUS	17.22	1.236	108.	133.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		344.32	2.537	24.	61.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		34.43	1.537	48.	74.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		3030.02	3.481	72.	251.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOGENOIDES		17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			223.81	2.350	24.	56.	
INSECTA	PLECOPTERA	PERLODIDAE	SKWALA	PARALLELA	51.65	1.713	18.	31.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		103.30	2.014	48.	97.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		51.65	1.713	12.	21.	
INSECTA	PLECOPTERA	TAENIOPTERYGIDAE	TAENIONEMA		120.51	2.081	48.	100.	
INSECTA	PLECOPTERA	PTERONARCYIDAE	PTERONARCELLA	BADIA	117.22	1.236	24.	30.	
INSECTA	PLECOPTERA	CAPNIIDAE			103.30	2.014	32.	64.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		568.13	2.754	6.	17.	
INSECTA	PLECOPTERA	PERLODIDAE	PERLINODES		51.65	1.713	48.	82.	
INSECTA	PLECOPTERA	PERLIDAE	CLAASSENIA	SABULOSA	51.65	1.713	6.	10.	
INSECTA	PLECOPTERA	PERLIDAE			86.08	1.935	24.	46.	
INSECTA	TRICHOPTERA				103.30	2.014	72.	145.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		1773.25	3.249	108.	351.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE		929.66	2.968	108.	321.	
INSECTA	TRICHOPTERA	LIMNAPHILIDAE	GOERA		17.22	1.236	72.	89.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		51.65	1.713	18.	31.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		120.51	2.081	24.	50.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	ALISOTRICHIA		17.22	1.236	108.	133.	
INSECTA	COLEOPTERA	ELMIDAE			5250.88	3.720	104.	387.	
INSECTA	ODONATA	COENAGRIONIDAE			17.22	1.236	108.	133.	
INSECTA	DIPTERA				17.22	1.236	108.	133.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	17.22	1.236	24.	30.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		86.08	1.935	36.	70.	
INSECTA	DIPTERA	SIMULIIDAE			292.67	2.466	108.	266.	
INSECTA	DIPTERA	CHIRONOMIDAE			3425.98	3.535	108.	382.	
INSECTA	DIPTERA	EMPIDIDAE			34.43	1.537	95.	146.	
INSECTA	DIPTERA	CERATOPOGONIDAE			137.73	2.139	108.	231.	
INSECTA	DIPTERA	RHAGIONIDAE	ATHERIX		137.73	2.139	24.	51.	
INSECTA	DIPTERA	TIPULIDAE			17.22	1.236	72.	89.	
CRUSTACEA	COPEPODA				17.22	1.236	108.	133.	
CRUSTACEA	OSTRACODA				34.43	1.537	108.	168.	
OLIGOCHAETA					1411.71	3.150	108.	340.	
ARACHNIDA	HYDRACARINA				878.02	2.944	98.	288.	
NEMATODA					88.86	1.838	108.	199.	
TOTALS					29516.84	4.470			3.20

# TOTAL SAMPLE STATISTICS

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 09 09 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	39	18912.	10258.	27565.	12622.19	29.85	66.74	3.3132	0.3736	59.	59.

## SPECIES ANALYSES

STATION: 9.3

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 09 09 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		258.24	2.412	21.	51.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		1299.81	3.114	30.	93.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	HEPTAGENIA		8.61	0.935	54.	50.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	989.92	2.996	48.	144.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	137.73	2.139	2.	4.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	34.43	1.537	24.	37.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	SPINIFERA	51.65	1.713	24.	41.	
INSECTA	EPHEMEROPTERA	TRICORYTHIDAE	TRICORYTHODES	MINUTUS	8.61	0.935	108.	101.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		731.68	2.864	24.	69.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		17.22	1.236	48.	59.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		645.60	2.810	72.	202.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			370.14	2.568	24.	62.	
INSECTA	PLECOPTERA	PERLODIDAE	SKWALA	PARALLELA	86.08	1.935	18.	35.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		68.86	1.838	48.	88.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		17.22	1.236	12.	15.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		34.43	1.537	16.	25.	
INSECTA	PLECOPTERA	PERLIDAE	CALINEURIA		34.43	1.537	24.	37.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	NEMOURIDAE	MALENKA		206.59	2.315	36.	83.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		206.59	2.315	6.	14.	
INSECTA	PLECOPTERA	PERLODIDAE	PERLINODES		43.04	1.634	48.	78.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		585.34	2.767	108.	299.	
INSECTA	TRICHOPTERA	PSYCHOMYIDAE	POLYCENTROPUS		6.46	0.810	108.	87.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		8.61	0.935	108.	101.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	ALISOTRICHIA		34.43	1.537	108.	166.	
INSECTA	COLEOPTERA	ELMIDAE			4002.72	3.602	104.	375.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	77.47	1.889	24.	45.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		120.51	2.081	36.	75.	
INSECTA	DIPTERA	SIMULIIDAE			34.43	1.537	108.	166.	
INSECTA	DIPTERA	CHIRONOMIDAE			5332.66	3.727	108.	403.	
INSECTA	DIPTERA	CERATOPOGONIDAE			241.02	2.382	108.	257.	
INSECTA	DIPTERA	PSYCHODIDAE	PERICOMA		103.30	2.014	36.	73.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	17.22	1.236	30.	37.	
INSECTA	DIPTERA	TIPULIDAE			15.06	1.178	72.	85.	
CRUSTACEA	COPEPODA				17.22	1.236	108.	133.	
CRUSTACEA	OSTRACODA				51.65	1.713	108.	185.	
OLIGOCHAETA					51.65	1.713	108.	185.	
ARACHNIDA	HYDRACARINA				2909.50	3.464	98.	339.	
NEMATODA					34.43	1.537	108.	166.	
TOTALS					18911.78	4.277			1.80

# TOTAL SAMPLE STATISTICS

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 09 09 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	41	15748.	10243.	21254.	8030.28	22.80	50.99	3.4827	0.3505	55.	59.

## SPECIES ANALYSES

STATION: 12.1

BADGER CREEK, MT HOOD NATIONAL FOREST

DATE: 09 09 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		189.38	2.277	21.	48.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		1697.93	3.230	30.	97.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	182.92	2.262	48.	109.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	19.37	1.287	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	SPINIFERA	4.30	0.634	24.	15.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		247.48	2.394	24.	57.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		40.89	1.612	48.	77.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		180.77	2.257	72.	183.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	MARGARITA	81.78	1.913	24.	46.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	HECUBA	2.15	0.333	48.	16.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			518.63	2.715	24.	65.	
INSECTA	PLECOPTERA	PERLODIDAE	SKWALA	PARALLELA	316.34	2.500	18.	45.	
INSECTA	PLECOPTERA	PERLODIDAE	MEGARCYS		51.65	1.713	24.	41.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		2.15	0.333	12.	4.	
INSECTA	PLECOPTERA	CAPNIIDAE			17.22	1.236	32.	40.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		68.86	1.838	16.	29.	
INSECTA	PLECOPTERA	NEMOURIDAE	MALENKA		30.13	1.479	36.	53.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		223.81	2.350	6.	14.	
INSECTA	PLECOPTERA	PERLODIDAE	PERLINODES		17.22	1.236	48.	59.	
INSECTA	TRICHOPTERA	PSYCHOMYIDAE	PSYCHOMYIA		36.58	1.563	108.	169.	
INSECTA	TRICHOPTERA	PSYCHOMYIDAE	POLYCENTROPUS		34.43	1.537	108.	166.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		64.56	1.810	18.	33.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	LEPIDOSTOMATIDAE			30.13	1.479	18.	27.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		36.58	1.563	108.	169.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	ALISOTRICHIA		191.53	2.282	108.	246.	
INSECTA	COLEOPTERA	ELMIDAE			2083.14	3.319	104.	345.	
INSECTA	DIPTERA				8.61	0.935	108.	101.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	146.34	2.165	24.	52.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		17.22	1.236	24.	30.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		6.46	0.810	36.	29.	
INSECTA	DIPTERA	CHIRONOMIDAE			4960.36	3.696	108.	399.	
INSECTA	DIPTERA	CERATOPOGONIDAE			348.62	2.542	108.	275.	
INSECTA	DIPTERA	PSYCHODIDAE	PERICOMA		613.32	2.788	36.	100.	
INSECTA	DIPTERA	TABANIDAE			17.22	1.236	108.	133.	
CRUSTACEA	DECAPODA				17.22	1.236	108.	133.	
CRUSTACEA	COPEPODA				17.22	1.236	108.	133.	
CRUSTACEA	OSTRACODA				301.28	2.479	108.	268.	
OLIGOCHAETA					1093.22	3.039	108.	328.	
ARACHNIDA	HYDRACARINA				1796.92	3.255	98.	319.	
TOTALS					15748.34	4.197			2.80

## TYGH CREEK

Three stations were established on this stream based upon the miles above the mouth of the stream. The Lower Station was 3.3, Middle Station (8.4) was within the spray zone and the Control Station (9.6) was above the spray zone. Analysis elements for the three stations will be discussed individually.

At Station 3.3 the number of taxa observed in the community on June 7 before the spray project was 43. The day of the project this number was 44 and the number of taxa was reduced to 38 by the day after the spray project. This drop in the number of species was due mainly to a change in the mayfly population, which group rebounded with even more taxa by June 15 when there were 42 taxa in the community, almost the same as found before the spray project. This was maintained through the July sampling date and by September that number was up to 50 taxa which is excellent diversity in a community.

The BCI values did not show much change in the tolerance of the community on the dates sampled. On June 7, 8, 9 and 15 the BCI values were 85, 82, 81, and 86 respectively. In July the BCI was 83 and by September it was 93, which was better than found before the spray project.

The macroinvertebrate standing crop was a little lower than one would expect in a stream with 30 mg/l alkalinity. Before the spray project it was  $0.7 \text{ g/m}^2$ , the day of the spray project the biomass was  $1.2 \text{ g/m}^2$  but that included a crayfish which increased this weight by  $0.3 \text{ g/m}^2$ . Without the crayfish it would have been  $0.9 \text{ g/m}^2$ . By the day after the spray project the biomass was the same as found in the sample taken before the spray project. By June 15 it was  $0.6 \text{ g/m}^2$  which was just about the same. It remained at  $0.7 \text{ g/m}^2$  in July and by September had increased to  $1.6 \text{ g/m}^2$ , which is good for a stream with 30 mg/l alkalinity.

The DAT Diversity Index value was 20.1 on June 7 and remained in the excellent range, over 18, except for the July sampling date when it was in the upper good range. The number of organisms/ $\text{m}^2$  showed the normal population fluctuations of a community with amplification of numbers in the mid summer and fall samples. Ordinarily a community is considered healthy if there are at least 2,000 organisms/ $\text{m}^2$  and this was exceeded by communities at each of the stations on each of the sampling dates.

Clean water species present on each of the sampling dates indicated good water quality and good instream substrate. Moderate amounts of sedimentation were indicated on the June 7, July 8 and September 19 sampling dates and there appeared to be a fairly good source of nutrients on most of the sampling dates. The observed number of shredders in the community is generally found where riparian habitat is in good condition.

Table 13 shows the percentage of each trophic group found in the community on each of the sampling dates at Station 3.3 and Table 16 shows the occurrence of each of the species found at Station 3.3 on the dates sampled during the monitored period.

Only three of the mayfly species may have been affected by the spray project as observed in Table 16. Rhythrogena, with a spring/summer emergence period, disappeared after the June 7 sampling date but reappeared by September 19. Although it did reappear in September, Rhythrogena was found on more sample dates at the Control Station which may indicate some influence from the B-t spray at Station 3.3. Ephemerella tibialis disappeared after June 15. It has a summer emergence period and this pattern found at Station 3.3 was also observed to be about the same at the Control Station (9.6). Ephemerella teresa, with a summer emergence period, was missing from the samples June 8, 9, July 7 and September 19.

Same as  
Control

The mayflies found on each of the sampling dates which did not appear to be affected by the spray project included two of the more sensitive mayfly species Epeorus and Ephemerella doddsi, and other mayflies Cinygmula, Paraleptophlebia, Amelanus and Baetis.

Of the stoneflies there were 7 species that may have been affected by the spray project. Although Hesperoperla pacifica was not present on the prespray sample June 7 date, it was found June 8, 9 and 15, missing in July and reappeared in September. It has a spring and summer emergence pattern, however Hesperoperla is a biennial species so it generally has two generations in the stream at one time. Its presence on the September sampling date indicates it was not eliminated by the spray project.



The stonefly Kogotus was found in June 7 and 8 samples and was missing in the samples thereafter. It did not appear in September samples and thus may have been affected by the spray project. Members of the family Capniidae were found in the June 7 and July 7 samples and in the September samples. Although it was missing from some of the samples, its pattern of occurrence was basically the same as found at the Control Station (9.6). Its emergence time varies, it could happen any of the quarters of the year. Members of the family Leuctridae was missing on some of the sampling dates but was also present in the September samples. Isoperla was present on June 7 and 9 but missing from all other sampling dates. This species had become reestablished by September at the Control Station but did not show up at Station 3.3 in September. Calineuria was found only on the June 15 sampling date. It has a spring and summer emergence time and the pattern observed at Station 3.3 was the same as that at the Control Station (9.6). Taenionema was found only in the September samples and this was true also at the Control Station.

Those species that appeared unaffected by the spray project and found on each of the sampling dates were members of the family Chloroperlidae and the genera Zapada and Amphinemura. Caddisflies appeared to be affected very little by the spray project. Some occurred periodically, but those that were found in the prespray samples were also found throughout the monitored period, such as Hydropsyche, Glossosoma and Rhyacophila. The dipterans did not appear to be affected by the spray project and most were found on each of the sampling dates. Antocha did disappear on the June 15 and July 7 sampling dates but reappeared in September and thus was not permanently displaced by the spray project.

Other species, such as those in the order Odonota and Decapoda are generally collected periodically, therefore one would not expect to find those in every sample. Another species that may have been affected however, was the flatworm, Planaria, which was present on June 7 and missing on the rest of the June sampling dates and also on the September sampling date.

In Table 13 one can observe the percentage of the community each of the trophic groups represents at Station 3.3 over the monitored time period. On the June and July sampling dates there appeared to be a good balance among the trophic groups. However in September, the percentage of species in each of these groups was not entirely as expected. There was, for instance, a decrease in the number of species representing the

collector/gatherers, they decreased from 50 to 36 percent from July to September. The number of scrapers was about the same as found at the Control Station and was about what one would expect. There was a proportionate increase in the number of predators at this station for some reason, and thus more predators than one would expect in a community. And there was the expected increase in the number of shredder species for fall samples. These species get their nutrients from leaves that fall into the stream. Overall, Station 3.3 did not appear to have any severe impacts. There may have been moderate effects from the spray project, but they were observed for few if any species within the community.

Station 8.4. was within the spray zone. Clean water species on each of the sampling dates indicated good water quality and good instream substrate in the stream reach. It appeared there was a minimal amount of sediment and organic enrichment impacts. It appeared there may be some sediment impacts, possibly from roads in the area. This was particularly noticeable in the early June samples, and in July, with little indication in September. The observed number of shredders in the community is generally found where riparian habitat is in good condition.

The number of taxa found at Station 8.4 on the June 7 sampling date, before the spray project, was 44. The day of the spray project the number of taxa was reduced to 37, and the decrease was mainly in the mayfly and caddisfly groups. The stoneflies appeared to be affected very little, if any, at this station. The day after the spray the number of taxa at this station was 45, one more than found on June 7. On June 15 the number of taxa was up to 51, by July this was reduced to 40 and in September was exactly the same as found on the day before the spray project.

The BCI values never did show a more tolerant community at this station. One June 7 the BCI was 86. The day of the spray project the BCI value was 88 as it was the day after the spray project. It then climbed by June 15 to 93, July 7 it was 91 and in September 94, indicating this aquatic ecosystem was fairly close to its potential.

The macroinvertebrate standing crop remained stable throughout the monitored period except for the September sampling date. On most dates the biomass was  $1.1 \text{ g/m}^2$  which is about what one would expect in a stream with 30-35 mg/l alkalinity. In September this fell to  $0.5 \text{ g/m}^2$  which was lower than one would expect in such a stream. This seemed to be due

partly to a reduction of nutrients in the system which was indicated by the low number of scrapers, those that feed on algae, in the July and September samples.

The DAT Diversity Index value was 20.2 and was thus in the excellent range on June 7, the day before the spray project. It remained in the excellent range, 18.7, on June 8, increased to 23.4 by the day after the spray (June 9) and remained in the excellent range on the other sampling dates. The number of organisms/m<sup>2</sup> was over 7,000 on June 7. It jumped to 14,000 June 8, back to 8,000 on June 9, and just under 8,000 on June 15 and had an expected increase in September samples. This analysis element did not show any negative effects on the community.

In Table 17 one can observe the occurrence of specific taxa over the monitored period at Station 8.4. In the mayfly order Rhythrogena disappeared after June 9 as was observed at Station 3.3, and did not reappear in September, thus may have been affected by the spray project. This species does have a spring and summer emergence period. Ephemerella coloradensis was found only on June 7 and July 7, it was absent from other sampling dates and may also have been affected by the spray project. However, it has a summer/fall emergence pattern. Ephemerella spinifera was found on June 7 and 15 and was absent from other sampling dates. It did not reappear in September and may also have been affected by the spray project. Ephemerella margarita was not found in the samples until June 15 and was also in the September samples, thus was not severely effected. not in control

Species which did not appear to be affected by the spray project and which were found on each of the sampling dates were Epeorus, Cinygmula, Ephemerella inermis, Ephemerella doddsi, Ephemerella tibialis, Paralentophlebia, Ameletus and Baetis. These species have varying trophic habits.

Of the stoneflies, the large stonefly Pteronarcys californica was found only in the June 8 samples and was missing from all other sample dates. It may have been affected by the spray project. Cultus, which was found on the June 7 sampling date, was missing from the other June sampling dates, but reappeared on July 7 and was present in the September sample. This species may have been influenced somewhat but was able to maintain its population.

Kogotus which was not found on the June 7 sampling date, was found on the other June dates but was missing from July and September samples. It does have an emergence pattern in the summer which may explain its absence during that period of

time. The large stonefly Glaassenia was found June 8, 9 and July 7 and was missing from the other dates sampled. It has a summer emergence pattern and thus may or may not have been affected by the spray project. Pteronarcissa badia was found only in September samples as was the case at Station 3.3. It has a spring/summer emergence pattern.

Stoneflies that did not appear to be affected by the spray project because they were found on each of the sampling dates were Chloroperlidae, Hesperoperla, Zanada, Leuctridae, and Amphinemura.

Of the caddisflies the only taxon that appeared to possibly be affected was in the family Lepidostomatidae. It was present on the June 7 sampling date and absent on dates thereafter, it did not reappear by September. It does have a spring/summer emergence pattern but may have been affected by the spray project.

Among the dipterans, <sup>(not in control)</sup> Tabanidae was found only on the June 8 and 9 sampling dates and was absent thereafter. It has a summer emergence pattern and its occurrence was the same on Badger Creek at each of the stations. The occurrence of the Gastropod, Lymnaea, during all the June sampling dates except June 7, was also found at the Control Station (9.6).

Table 14 shows the percent of occurrence of each of the trophic groups in the community during the monitored period at Station 8.4 on Tygh Creek. On June 8 there was a significant reduction in the number of predators in the community. This was observed also on Badger Creek but it was not sustained on either stream. There were even more predators on June 9 than on June 7 on Tygh Creek Station 8.4 and between 14 and 16 percent was found through the rest of the monitored period.

It was interesting that in September not all of the monitored groups were typically represented at Station 8.4. Compared to June samples there was a reduction in the number of scrapers, which may indicate a reduction of nutrients in the ecosystem in July and September. This was reflected in a reduction in macroinvertebrate community biomass in September. There were proportionately more filterers in the community in September, and the expected fall season increase in the number of shredders did not occur at Station 8.4 but was observed normal at Station 3.3 and Station 9.6.

The Control Station was 9.6. On the computer printout lists of taxa, one can observe that there was excellent

macroinvertebrate diversity at this station. There was good diversity at each of the stations on this stream, but this station was good compared to any stream. Clean water species found on each of the sampling dates indicated good water quality and good instream substrate in this stream reach. The good diversity and good balance among the trophic groups indicates good stability in this ecosystem. The observed number of shredders in this community is generally found where riparian habitat is in good condition. There were indications of a good source of nutrients in this ecosystem and periodically an indication of moderate amounts of sedimentation, particularly on the June 15 and July 7 sampling dates. This may have been due to impacts from roads used in the area. *110*

The number of taxa at this station ranged from 42 to 55 and showed good diversity and did not fluctuate very much during the period monitored. The BCI values showed good conditions in June and excellent conditions in July and September and indicated this ecosystem was close to matching its potential.

The macroinvertebrate standing crop remained about the same during the period monitored being just over  $1.0 \text{ g/m}^2$  which is about what one would expect in a stream with 30-35 mg/l alkalinity. The DAT Diversity Index value remained in the excellent range beginning June 7 with 21.7. It did fall into the upper good range on June 9 with 17.1, then was back up to 21.1 on June 15, ending up with a DAT of 23.1 in September. The number of organisms/ $\text{m}^2$  showed a rich community with some fluctuation which corresponded well with that found at the other stations, particularly 8.4 in June, and had an even higher increase in the number of organisms in July and September, going up to almost  $13,000/\text{m}^2$  by September.

The patterns of occurrence shown in Table 18 for the macroinvertebrae taxa on Tygh Creek at the Control Station (9.6) on specific dates sampled, show a similar pattern to that found at the other stations sampled. The occurrence and absence of these species corresponds to expected nymphal and emergence patterns, and for most species compared favorably with life cycle patterns observed at the Control Station on Badger Creek.

In Table 15, which shows the percentage of trophic groups in the community at Station 9.6 on Tygh Creek, it was interesting that the percentage of predators in the community was very low on June 7, the day before the spray project, but remained at a good level for the other dates sampled. In September the macroinvertebrate community showed expected fall

season changes including an expected increase in the number of scrapers due to an increase in the number of diatoms and other algae during this time of year and the expected increase in the percentage of shredders in the community, which take advantage of the falling leaves (Allochthonous nutrient sources) during that time of year. The trophic balance in the community was good on each of the sampling dates at the Control Station.

USFS - INTERMOUNTAIN REGION - ANNUAL PROGRESS REPORT

MACROINVERTEBRATE ANALYSIS

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Forest/District Mt. Hood National Forest  
Stream TYGH CREEK  
State/County Oregon, Wasco County  
Forest Service Cat.-No. B-t Spray Project

B.

Organism/m <sup>2</sup>	Station	Date(s)	Diversity Index DAT (mean)	Standing Crop g/m <sup>2</sup> (mean)	Biotic Condition Index BCI 50	# Taxa
6,953	3.3	6-07-88	20.1	0.7	85	43
7,435	8.4	6-07-88	22.2	1.1	86	44
7,949	9.6	6-07-88	21.7	1.2	82	44
5,664	3.3	6-08-88	19.2 (w/decapoda)	1.2 (.9)	82	44
14,061	8.4	6-08-88	18.7	1.1	88	37
16,078	9.6	6-08-88	20.2	1.6	86	46
5,681	3.3	6-09-88	18.7	0.7	81	38
8,066	8.4	6-09-88	23.4	1.1	88	45
6,934	9.6	6-09-88	17.1	1.0	86	42
6,320	3.3	6-15-88	18.1	0.6	86	42
7,693	8.4	6-15-88	20.4	1.0	93	51
15,796	9.6	6-15-88	22.5	0.9	91	49
9,103	3.3	7-07-88	15.8	0.7	83	42
9,865	8.4	7-07-88	18.0	0.9	91	40
12,677	9.6	7-07-88	19.2	1.1	93	45
9,585	3.3	9-19-88	21.8	1.6	93	50
10,603	8.4	9-19-88	20.8	0.5	94	44
12,968	9.6	9-19-88	23.1	1.1	94	55

Scale:

Excellent  
Good  
Fair  
Poor

DAT

18 - 26  
11 - 17  
6 - 10  
0 - 5

Standing crop

4.0 - 12.0  
1.6 - 4.0  
0.6 - 1.5  
0.0 - 0.5

BCI

above 90  
80 - 90  
72 - 79  
below 72

TABLE 10. MT. HOOD NATIONAL FOREST--TYGH CREEK STATION 3.3  
ECOLOGICAL ASSOCIATIONS LIST FOR ALL OF THE TAXA FOUND IN SAMPLES  
TAKEN JUNE 7,8,9,15, JULY 7 AND SEPTEMBER 19

Taxa	Habitat <sup>a</sup>	Habit <sup>b</sup>	Trophic Relationship <sup>c</sup>
<b>Ephemeroptera</b>			
<u>Epeorus</u> sp.	1	1	1,2,3
<u>Cinygmula</u> sp.	1,2	1	1,2,3 det,dia
<u>Rhithrogena</u> sp.	1	1	1,2,3 det,dia
<u>Heptagenia</u> sp.	1,2	1	1,2,3,6
<u>Ephemerella inermis</u>	1,2	1	1,2 det,dia
<u>Ephemerella doddsi</u>	1	1,2,4	1,2,3,6 det,dia
<u>Ephemerella tibialis</u>	1	1,2	1,2
<u>Ephemerella delantala</u>	1	1,2	1,2
<u>Ephemerella teresa</u>	1	1,2	1,2
<u>Ephemerella hecuba</u>	2	1,2,5	1,2
<u>Paraleptophlebia</u> sp.	1,2	1,2,4	1,2,5 det,dia
<u>Ameletus</u> sp.	1,2	1,4	1,2 det,dia
<u>Baetis</u> sp.	1,2	1,3,4	1,2,3 det,dia
<b>Plecoptera</b>			
Chloroperlidae	1	1	1,2,3,6
<u>Skwala parallela</u>	1	1	6
<u>Hesperoperla pacifica</u>	1	1	6
<u>Cultus</u> sp.	1	1	6
<u>Kogotus</u>	1	1	6
<u>Zapada</u> sp.	1	1,2	5 det
<u>Malenka</u>	1,2	1,2	5 det
Capniidae	1,2	1,2	5 det
Leuctridae	1,2	1,2	5 det
Perlidae	1	1	6
<u>Perlinodes</u>	1	1	6
<u>Amphinemura</u>	1,2	1,2	1,2,5 det
<u>Isoperla</u> sp.	1,2	1,2	1,2,6 chi,eph
<u>Calineuria</u>	1	1	6
<u>Isoxenosoides</u>	1	1	3,6
<u>Glassenia sabulosa</u>	1	1	6
<u>Taenionema</u> sp.	1,2	1,2	3
<u>Pteronarcella badia</u>	1,2	1,2	3,5,6 det
<b>Trichoptera</b>			
<u>Hydropsyche</u> sp.	1,2	1,6	1,4 det,ani
<u>Cheumatopsyche</u> sp.	1,2	1,6	1,4 det,ani
<u>Arctopsyche</u> sp.	1	1,6	1,4
<u>Parapsyche</u> sp.	1	1,6	1,4,6 det,ani
<u>Micrasema</u> sp.	1	2,8	1,2,5
<u>Glossosoma</u> sp.	1	1,8	3 dia
<u>Rhyacophila</u> sp.	1	1	1,2,6
Limnephilidae	1,2	1,2,3	1,2,3,5-
<u>Lepidostoma</u>	1,2	3,2,1	5
<u>Hydroptila</u>	1,2	1	3,7



TABLE 10 - Continued

Coleoptera			
Elmidae	1	1,3	1,2,3
Diptera			
<u>Antocha monticola</u>	1	1,7	1,2
<u>Hexatoma</u> sp.	1,2	1,2,5	6
<u>Dicranota</u>	1,2	2,5	1,5,6
<u>Glutops rossi</u>	2	2,5	7
<u>Holorusia</u>	2	5	5 det
Simuliidae	1	1	1,4
Chironomidae	1,2	2,5,7	1,2,4,6,7
Empididae	1,2	2,5	1,2,6
<u>Molophilus</u>	1,2	5	1,2
Ceratopogonidae	2	2,5	1,2
<u>Dixa</u>	1,2	4,1	1,2
<u>Maruina</u>	2	5	1,2
<u>Pericoma</u>	2	5	1,2
Odonata			
Gomphidae	2	5	6
<u>Ophiogomphus</u>	1,2	5	6
<u>Gomphus</u>	2	5	6
<u>Planaria</u> sp.	1	1,3,4	1 scavengers
Ostracoda	2	8	4
Pelecypoda	2	5	4
Oligochaeta	2	2,5	1,2
Nematoda	1,2	1,2,5	1 det
Copepoda	2-lentic	3,4	1,3,4 det, ani
Hydracarina	1,2	1	7,8
Decapoda	2	3,4	1,2,6 scavengers
Gastropoda			
<u>Lymnaea</u>	2	1,8	3
<hr/>			
a. 1=lotic, erosional 2=lotic depositional	b. 1=clingers 2=sprawlers 3=climbers 4=swimmers 5=burrowers 6=net spinners 7=tube makers 8=case makers	c. 1=collectors 2=gatherers 3=scrapers 4=filterers 5=shredders 6=engulfers 7=piercers 8=parasitic	det=detritus dia=diatoms chi=Chironomidae eph=Ephemeroptera ani=animal

TABLE 11. MT. HOOD NATIONAL FOREST--TYGH CREEK STATION 8.4  
ECOLOGICAL ASSOCIATIONS LIST FOR ALL OF THE TAXA FOUND IN SAMPLES  
TAKEN JUNE 7,8,9,15, JULY 7 AND SEPTEMBER 9

Taxa	Habitat <sup>a</sup>	Habit <sup>b</sup>	Trophic Relationship <sup>c</sup>
<b>Ephemeroptera</b>			
<u>Epeorus</u> sp.	1	1	1,2,3
<u>Cinygmula</u> sp.	1,2	1	1,2,3 det,dia
<u>Rhithrogena</u> sp.	1	1	1,2,3 det,dia
<u>Ephemerella inermis</u>	1,2	1	1,2 det,dia
<u>Ephemerella doddsi</u>	1	1,2,4	1,2,3,6 det,dia
<u>Ephemerella tibialis</u>	1	1,2	1,2
<u>Ephemerella delantala</u>	1	1,2	1,2
<u>Ephemerella teresa</u>	1	1,2	1,2
<u>Ephemerella hecuba</u>	2	1,2,5	1,2
<u>Ephemerella coloradensis</u>	1,2	1	1,2,3 det,dia
<u>Ephemerella spinifera</u>	1	1,2,4	1,2,6
<u>Ephemerella margarita</u>	1	1	1,2
<u>Paraleptophlebia</u> sp.	1,2	1,2,4	1,2,5 det,dia
<u>Ameletus</u> sp.	1,2	1,4	1,2 det,dia
<u>Baetis</u> sp.	1,2	1,3,4	1,2,3 det,dia
<b>Plecoptera</b>			
<u>Chloroperlidae</u>	1	1	1,2,3,6
<u>Skwala parallela</u>	1	1	6
<u>Hesperoperla pacifica</u>	1	1	6
<u>Pteronarcys californica</u>	1,2	1,2	5 det
<u>Cultus</u> sp.	1	1	6
<u>Kogotus</u>	1	1	6
<u>Zapada</u> sp.	1	1,2	5 det
<u>Malenka</u>	1,2	1,2	5 det
<u>Visoka cataractae</u>	1	1	1,2,6
<u>Alloperla</u>			
<u>Capniidae</u>	1,2	1,2	5 det
<u>Leuctridae</u>	1,2	1,2	5 det
<u>Perlidae</u>	1	1	6
<u>Perlinodes</u>	1	1	6
<u>Amphinemura</u>	1,2	1,2	1,2,5 det
<u>Isoperla</u> sp.	1,2	1,2	1,2,6 chi,eph
<u>Isogenoides</u>	1	1	3,6
<u>Classenia sabulosa</u>	1	1	6
<u>Pteronarcella badia</u>	1,2	1,2	3,5,6 det
<b>Trichoptera</b>			
<u>Hydropsyche</u> sp.	1,2	1,6	1,4 det,ani
<u>Arctopsyche</u> sp.	1	1,6	1,4
<u>Onocosmoecus</u>	2	2	5
<u>Oligophlebodes</u>	1	1	1,2,3 -
<u>Himalopsyche</u>	1	1	6,3
<u>Neophylax</u>	1,2	1,2	5
<u>Micrasema</u> sp.	1	2,8	1,2,5
<u>Glossogoma</u> sp.	1	1,8	3 dia

TABLE 11 - Continued

<u>Rhyacophila</u> sp.	1	1	1,2,6
Limnephilidae	1,2	1,2,3	1,2,3,5
Lepidostomatidae	1,2	1,2,3,8	5 det
<u>Psychomyia</u>	1	1	1,2,3
<u>Alisotrichia</u>	1	1	1,2,3
Coleoptera			
Elmidae	1	1,3	1,2,3
Diptera			
<u>Antocha monticola</u>	1	1,7	1,2
<u>Hexatoma</u> sp.	1,2	1,2,5	6
<u>Dicranota</u>	1,2	2,5	1,5,6
<u>Glutons rossi</u>	2	2,5	7
Simuliidae	1	1	1,4
Chironomidae	1,2	2,5,7	1,2,4,6,7
Empididae	1,2	2,5	1,2,6
Ceratopogonidae	2	2,5	1,2
<u>Dixa</u>	1,2	4,1	1,2
<u>Pericoma</u>	2	5	1,2
Tabanidae			
Planaria sp.			
Planaria sp.	1	1,3,4	1 scavengers
Ostracoda	2	8	4
Pelecypoda	2	5	4
Oligochaeta	2	2,5	1,2
Nematoda	1,2	1,2,5	1 det
Copepoda	2-lentic	3,4	1,3,4 det, ani
Hydracarina	1,2	1	7,8
Gastropoda			
<u>Lymnaea</u>	2	1,8	3
-----			
a. 1=lotic,	b. 1=clingers	c. 1=collectors	det=detritus
erosional	2=sprawlers	2=gatherers	dia=diatoms
2=lotic	3=climbers	3=scrapers	chi=Chironomidae
depositional	4=swimmers	4=filterers	eph=Ephemeroptera
	5=burrowers	5=shredders	ani=animal
	6=net spinners	6=engulfers	
	7=tube makers	7=piercers	
	8=case makers	8=parasitic	

TABLE 12. MT. HOOD NATIONAL FOREST--TYGH CREEK STATION 9.6  
ECOLOGICAL ASSOCIATIONS LIST FOR ALL OF THE TAXA FOUND IN SAMPLES  
TAKEN JUNE 7,8,9,15, JULY 7 AND SEPTEMBER 9

Taxa	Habitat <sup>a</sup>	Habit <sup>b</sup>	Trophic Relationship <sup>c</sup>
<b>Ephemeroptera</b>			
<u>Epeorus</u> sp.	1	1	1,2,3
<u>Cinygmula</u> sp.	1,2	1	1,2,3 det,dia
<u>Rhithrogena</u> sp.	1	1	1,2,3 det,dia
<u>Heptagenia</u> sp.	1,2	1	1,2,3,6
<u>Ephemerella inermis</u>	1,2	1	1,2 det,dia
<u>Ephemerella doddsi</u>	1	1,2,4	1,2,3,6 det,dia
<u>Ephemerella tibialis</u>	1	1,2	1,2
<u>Ephemerella soquele</u>	1	1,2	1,2
<u>Ephemerella delantala</u>	1	1,2	1,2
<u>Ephemerella teresa</u>	1	1,2	1,2
<u>Ephemerella coloradensis</u>	1,2	1	1,2,3 det,dia
<u>Ephemerella margarita</u>	1	1	1,2
<u>Paraleptophlebia</u> sp.	1,2	1,2,4	1,2,5 det,dia
<u>Ameletus</u> sp.	1,2	1,4	1,2 det,dia
<u>Baetis</u> sp.	1,2	1,3,4	1,2,3 det,dia
<b>Plecoptera</b>			
Chloroperlidae	1	1	1,2,3,6
<u>Skwala parallela</u>	1	1	6
<u>Hesperoperla pacifica</u>	1	1	6
<u>Pteronarcys californica</u>	1,2	1,2	5 det
<u>Megarctys</u>	1	1	6
<u>Cultus</u> sp.	1	1	6
<u>Kogotus</u>	1	1	6
<u>Zapada</u> sp.	1	1,2	5 det
<u>Malenka</u>	1,2	1,2	5 det
<u>Visoka</u>	1	1,2	5 det
<u>Amphinemura</u>	1,2	1,2	1,2,5 det
<u>Calineuria</u>	1	1	6
Capniidae	1,2	1,2	5 det
Leuctridae	1,2	1,2	5 det
Perlodidae	1	1	6
Perlidae	1	1	6
<u>Yoraperla</u>	1,2	1,2	1,2,5 det
<u>Isoperla</u> sp.	1,2	1,2	1,2,6 chi,eph
<u>Isogenoides</u>	1	1	3,6
<u>Taenionema</u>			
<b>Trichoptera</b>			
<u>Hydropsyche</u> sp.	1,2	1,6	1,4 det,ani
<u>Arctopsyche</u> sp.	1	1,6	1,4
<u>Parapsyche</u> sp.	1	1,6	1,4,6 det,ani
<u>Brachycentrus</u> sp.	1	1,8	1,3,4 det,ani,dia
<u>Oligophlebodes</u>	1	1	1,2,3
<u>Neophylax</u>	1,2	1,2	5
<u>Micrasema</u> sp.	1	2,8	1,2,5
<u>Glossosoma</u> sp.	1	1,8	3 dia

TABLE 12 - Continued

<u>Rhyacophila</u> sp.	1	1	1,2,6
<u>Limnephilidae</u>	1,2	1,2,3	1,2,3,5
<u>Lepidostomatidae</u>	1,2	1,2,3,8	5 det
<u>Alisotrichia</u>	1	1	1,2,3
<u>Hydroptila</u>	1,2	1	3,7
<u>Moselyana</u>	1,2	2	1,2
Coleoptera			
<u>Elmidae</u>	1	1,3	1,2,3
<u>Hydrophilidae</u>	2, lentic	3	6
<u>Ametor</u>	2	1	6
Megaloptera			
<u>Sialis</u>	1,2	5,3,1	6
Diptera			
<u>Antocha monticola</u>	1	1,7	1,2
<u>Hexatoma</u> sp.	1,2	1,2,5	6
<u>Dicranota</u>	1,2	2,5	1,5,6
<u>Glutons rossi</u>	2	2,5	7
<u>Simuliidae</u>	1	1	1,4
<u>Chironomidae</u>	1,2	2,5,7	1,2,4,6,7
<u>Empididae</u>	1,2	2,5	1,2,6
<u>Ceratopogonidae</u>	2	2,5	1,2
<u>Dixa</u>	1,2	4,1	1,2
<u>Pericoma</u>	2	5	1,2
<u>Maruina</u>	2	5	1,2
<u>Oreogeston</u>	1,2	2,5	6,1,2
<u>Planaria</u> sp.	1	1,3,4	1 scavengers
<u>Ostracoda</u>	2	8	4
<u>Pelecypoda</u>	2	5	4
<u>Oligochaeta</u>	2	2,5	1,2
<u>Nematoda</u>	1,2	1,2,5	1 det
<u>Copepoda</u>	2-lentic	3,4	1,3,4 det, ani
<u>Hydracarina</u>	1,2	1	7,8
<u>Gastropoda</u>			
<u>Lymnaea</u>	2	1,8	3

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a. 1=lentic, erosional 2=lentic depositional	b. 1=clingers 2=sprawlers 3=climbers 4=swimmers 5=burrowers 6=net spinners 7=tube makers 8=case makers	c. 1=collectors 2=gatherers 3=scrapers 4=filterers 5=shredders 6=engulfers 7=piersers 8=parasitic	det=detritus dia=diatoms chi=Chironomidae eph=Ephemeroptera ani=animal
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TABLE 13. PERCENT OF EACH TROPHIC GROUP FOUND IN THE MACROINVERTEBRATE COMMUNITIES OF TYGH CREEK STATION 3.3 ON THE DATES SAMPLED IN 1988

Trophic Group	JUNE				JULY	SEPTEMBER
	7	8	9	15	7	19
Scrapers	11	14	16	14	15	15
Collectors - Gatherers	55	49	50	47	50	36
Filterers	5	8	6	14	9	7
Engulfers (predators)	13	15	9	14	9	20
Piercers	5	3	3	3	5	4
Shredders	11	11	16	8	12	18

TABLE 14. PERCENT OF EACH TROPHIC GROUP FOUND IN THE MACROINVERTEBRATE COMMUNITIES OF TYGH CREEK STATION 8.4 ON THE DATES SAMPLED IN 1988

Trophic Group	JUNE				JULY	SEPTEMBER
	7	8	9	15	7	9
Scrapers	14	13	13	12	9	10
Collectors - Gatherers	48	47	50	49	49	45
Filterers	7	9	5	7	9	12
Engulfers (predators)	14	6	16	14	16	14
Piercers	3	6	5	2	3	5
Shredders	14	19	11	16	14	14

TABLE 15. PERCENT OF EACH TROPHIC GROUP FOUND IN THE MACROINVERTEBRATE COMMUNITIES OF TYGH CREEK STATION 9.6 ON THE DATES SAMPLED IN 1988

Trophic Group	JUNE				JULY	SEPTEMBER
	7	8	9	15	7	9
Scrapers	11	12	12	10	10	15
Collectors - Gatherers	54	49	50	49	45	43
Filterers	8	7	8	10	10	4
Engulfers (predators)	3	12	15	14	15	16
Piercers	8	5	3	3	5	2
Shredders	16	15	12	14	15	20



TABLE 16. OCCURRENCE OF MACROINVERTEBRATE TAXA -- TYGH CREEK STATION 3.3  
ON THE DATES SAMPLED. A PLUS (+) INDICATES PRESENCE, BLANK INDICATES ABSENCE

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	7	19
<u>Ephemeroptera</u>						
<u>Epeorus</u> sp.	+	+	+	+	+	+
<u>Cinygmula</u> sp.	+	+	+	+	+	+
<u>Rhithrogena</u> sp.	+					+
<u>Heptagenia</u> sp.					+	
<u>Ephemerella inermis</u>	+	+	+	+		+
<u>Ephemerella doddsi</u>	+	+	+	+	+	+
<u>Ephemerella tibialis</u>	+	+	+	+		
<u>Ephemerella delantala</u>	+	+		+	+	+
<u>Ephemerella teresa</u>	+			+		
<u>Ephemerella hecuba</u>				+	+	
<u>Paraleptophlebia</u> sp.	+	+	+	+	+	+
<u>Ameletus</u> sp.	+	+	+	+	+	+
<u>Baetis</u> sp.	+	+	+	+	+	+
<u>Plecoptera</u>						
<u>Chloroperlidae</u>	+	+	+	+	+	+
<u>Skwala parallela</u>						+
<u>Hesperoperla pacifica</u>		+	+	+		+
<u>Cultus</u> sp.						+
<u>Kogotus</u>	+	+				
<u>Zapada</u> sp.	+	+	+	+	+	+
<u>Malenka</u>			+			+
<u>Capniidae</u>	+				+	+
<u>Leuctridae</u>		+	+			+
<u>Perlidae</u>	+	+	+	+		+
<u>Perlinodes</u>						+
<u>Amphinemura</u>	+	+	+	+	+	+
<u>Isoperla</u> sp.	+		+			
<u>Calineuria</u>				+		
<u>Isogenoides</u>		+		+		
<u>Classenia sabulosa</u>		+				
<u>Taenionema</u> sp.						+
<u>Pteronarcella badia</u>						+
<u>Trichoptera</u>						
<u>Hydropsyche</u> sp.	+	+	+	+	+	+
<u>Cheumatopsyche</u> sp.		+				
<u>Arctopsyche</u> sp.				+		
<u>Parapsyche</u> sp.				+		
<u>Micrasema</u> sp.					+	
<u>Glossosoma</u> sp.	+	+	+	+	+	+
<u>Rhyacophila</u> sp.	+	+	+	+	+	+
<u>Limnephilidae</u>		+	+			
<u>Lepidostoma</u>						+
<u>Hydroptila</u>		+		+		

TABLE 16 - Continued

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	7	19
Coleoptera						
Elmidae		+	+	+	+	+
Diptera						
<u>Antocha monticola</u>	+	+	+			+
<u>Hexatoma</u> sp.	+	+		+	+	+
<u>Dicranota</u>	+	+	+	+	+	+
<u>Glutops rossi</u>	+				+	+
<u>Holorusia</u>						+
Simuliidae	+	+	+	+	+	+
Chironomidae	+	+	+	+	+	+
Empididae	+	+	+	+		+
<u>Molophilus</u>	+					
Ceratopogonidae	+	+	+		+	+
<u>Dixa</u>	+	+		+	+	
<u>Maruina</u>	+	+	+	+	+	
<u>Pericoma</u>					+	+
Odonata						
Gomphidae	+		+			
<u>Ophiogomphus</u>					+	+
<u>Gomphus</u>						+
<u>Planaria</u> sp.	+				+	
Ostracoda					+	+
Pelecypoda				+		
Oligochaeta	+	+	+	+	+	+
Nematoda	+	+	+	+	+	+
Copepoda	+	+	+	+	+	+
Hydracarina	+	+	+	+	+	+
Decapoda		+				+
Gastropoda			+		+	+
<u>Lymnaea</u>					+	+

TABLE 17. OCCURRENCE OF MACROINVERTEBRATE TAXA -- TYGH CREEK STATION 8.4  
ON THE DATES SAMPLED. A PLUS (+) INDICATES PRESENCE, BLANK INDICATES ABSENCE

Taxa	JUNE				JULY		SEPTEMBER
	7	8	9	15	7		19
<u>Ephemeroptera</u>							
<u>Epeorus</u> sp.	+	+	+	+	+		+
<u>Cinygmula</u> sp.	+	+	+	+	+		+
<u>Rhithrogena</u> sp.	+	+	+				
<u>Ephemerella inermis</u>	+	+	+	+	+		+
<u>Ephemerella doddsi</u>	+	+	+	+	+		+
<u>Ephemerella tibialis</u>	+	+	+	+	+		+
<u>Ephemerella delantala</u>	+	+	+	+	+		
<u>Ephemerella teresa</u>				+			
<u>Ephemerella hecuba</u>		+	+	+	+		
<u>Ephemerella coloradensis</u>	+				+		
<u>Ephemerella spinifera</u>	+			+			
<u>Ephemerella margarita</u>				+			+
<u>Paraleptophlebia</u> sp.	+	+	+	+	+		+
<u>Ameletus</u> sp.	+	+	+	+	+		+
<u>Baetis</u> sp.	+	+	+	+	+		+
<u>Plecoptera</u>							
<u>Chloroperlidae</u>	+	+	+	+	+		+
<u>Skwala parallela</u>							+
<u>Hesperoperla pacifica</u>	+	+	+	+	+		+
<u>Pteronarcys californica</u>		+					
<u>Cultus</u> sp.	+				+		+
<u>Kogotus</u>		+	+	+			
<u>Zapada</u> sp.	+	+	+	+	+		+
<u>Malenka</u>							+
<u>Visoka cataractae</u>	+	+	+	+			+
<u>Alloperla</u>	+						
<u>Capniidae</u>				+	+		+
<u>Leuctridae</u>	+	+	+	+	+		+
<u>Perlidae</u>	+	+	+	+			
<u>Perlinodes</u>							+
<u>Amphinemura</u>	+	+	+	+	+		+
<u>Isoperla</u> sp.		+	+	+			+
<u>Isogenoides</u>				+			
<u>Classenia sabulosa</u>		+	+		+		
<u>Pteronarcella badia</u>							+
<u>Trichoptera</u>							
<u>Hydropsyche</u> sp.	+	+	+	+	+		+
<u>Arctopsyche</u> sp.							+
<u>Onocosmoecus</u>				+			
<u>Oligophlebodes</u>				+			
<u>Himalopsyche</u>				+			
<u>Neophylax</u>				+			
<u>Micrasema</u> sp.	+	+	+	+	+		

TABLE 17 - Continued

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	7	19
<u>Glossosoma</u> sp.	+	+	+	+	+	+
<u>Rhyacophila</u> sp.	+	+	+	+	+	+
Limnephilidae	+	+	+	+		
Lepidostomatidae	+					
<u>Psychomyia</u>						+
<u>Alisotrichia</u>						+
Coleoptera						
Elmidae	+	+	+	+	+	+
Diptera						
<u>Antocha monticola</u>	+	+	+	+	+	+
<u>Hexatoma</u> sp.	+	+	+	+	+	+
<u>Dicranota</u>					+	
<u>Glutops rossi</u>		+	+			+
Simuliidae	+			+	+	+
Chironomidae	+	+	+	+	+	+
Empididae	+	+	+	+	+	+
Ceratopogonidae	+	+	+	+	+	+
<u>Dixa</u>					+	
<u>Pericoma</u>						
Tabanidae		+	+			
<u>Planaria</u> sp.	+	+	+	+		
Ostracoda	+	+	+	+	+	+
Pelecypoda						+
Oligochaeta	+	+	+	+	+	+
Nematoda	+		+	+	+	+
Copepoda	+	+	+	+	+	
Hydracarina	+	+	+	+	+	+
Gastropoda	+	+	+	+		
<u>Lymnaea</u>		+	+	+		

TABLE 18. OCCURRENCE OF MACROINVERTEBRATE TAXA -- TYGH CREEK STATION 9.6  
ON THE DATES SAMPLED. A PLUS (+) INDICATES PRESENCE, BLANK INDICATES ABSENCE

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	7	19
<u>Ephemeroptera</u>						
<u>Epeorus</u> sp.	+	+	+	+	+	+
<u>Cinygmula</u> sp.	+	+	+	+	+	+
<u>Rhithrogena</u> sp.		+	+		+	+
<u>Heptagenia</u> sp.						+
<u>Ephemerella inermis</u>	+	+		+	+	+
<u>Ephemerella doddsi</u>		+	+	+	+	+
<u>Ephemerella tibialis</u>	+	+	+	+	+	
<u>Ephemerella soquele</u>		+	+			
<u>Ephemerella delantala</u>		+	+	+		
<u>Ephemerella teresa</u>			+	+		
<u>Ephemerella coloradensis</u>		+	+	+	+	+
<u>Ephemerella margarita</u>	+					+
<u>Paraleptophlebia</u> sp.	+	+	+	+	+	+
<u>Ameletus</u> sp.	+	+	+	+	+	+
<u>Baetis</u> sp.	+	+	+	+	+	+
<u>Plecoptera</u>						
<u>Chloroperlidae</u>	+	+	+	+	+	+
<u>Skwala parallela</u>			+			+
<u>Hesperoperla pacifica</u>		+	+			+
<u>Pteronarcys californica</u>		+	+	+		+
<u>Megarctys</u>		+		+	+	
<u>Cultus</u> sp.				+	+	+
<u>Kogotus</u>						+
<u>Zapada</u> sp.	+	+	+	+	+	+
<u>Malenka</u>			+			+
<u>Visoka</u>	+	+	+	+	+	
<u>Amphinemura</u>	+	+		+	+	+
<u>Calineuria</u>					+	
<u>Capniidae</u>	+					+
<u>Leuctridae</u>	+	+	+	+	+	+
<u>Perlodidae</u>	+			+	+	
<u>Perlidae</u>		+		+	+	+
<u>Yoraperla</u>		+		+	+	+
<u>Isoerla</u> sp.			+			+
<u>Isozenoides</u>						+
<u>Taenionema</u>						+
<u>Trichoptera</u>						
<u>Hydropsyche</u> sp.	+	+	+	+	+	+
<u>Arctopsyche</u> sp.		+			+	
<u>Parapsyche</u> sp.				+		
<u>Brachycentrus</u> sp.						+
<u>Oligophlebodes</u>				+		
<u>Neophylax</u>						

TABLE 18 - Continued

Taxa	JUNE				JULY	SEPTEMBER
	7	8	9	15	7	19
<u>Micrasema</u> sp.	+	+	+	+	+	+
<u>Glossosoma</u> sp.	+	+	+	+	+	+
<u>Rhyacophila</u> sp.	+	+	+	+	+	+
Limnephilidae				+		
Lepidostomatidae	+	+		+	+	+
<u>Alisotrichia</u>						+
<u>Hydroptila</u>	+					
<u>Moselyana</u>			+			
Coleoptera						
Elmidae	+	+	+	+	+	+
Hydrophilidae	+					
<u>Ametor</u>				+		
Megaloptera						
<u>Sialis</u>			+			+
Diptera						
<u>Antocha monticola</u>	+	+	+	+	+	+
<u>Hexatoma</u> sp.	+	+	+	+	+	+
<u>Dicranota</u>						+
<u>Glutops rossi</u>	+	+			+	
Simuliidae	+	+	+	+	+	
Chironomidae	+	+	+	+	+	+
Empididae	+	+	+	+	+	+
Ceratopogonidae	+	+	+	+	+	+
<u>Dixa</u>					+	+
<u>Pericoma</u>						+
<u>Maruina</u>	+		+			+
<u>Oreogeton</u>	+					
<u>Planaria</u> sp.	+	+	+	+	+	+
Ostracoda	+	+	+	+	+	+
Pelecypoda						
Oligochaeta	+	+	+	+	+	
Nematoda	+	+		+	+	+
Copepoda	+	+	+	+	+	+
Hydracarina	+	+	+	+	+	+
Gastropoda		+	+	+		
<u>Lymnaea</u>		+	+			

## SPECIES ANALYSES

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		58.10	1.764	21.	37.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		370.14	2.568	30.	77.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		4.30	0.634	21.	13.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	27.98	1.447	48.	69.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	55.95	1.748	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	23.87	1.374	24.	33.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		10.76	1.032	24.	25.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		71.02	1.851	48.	89.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		383.06	2.583	72.	186.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	32.28	1.509	24.	36.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	8.61	0.935	24.	22.	
INSECTA	PLECOPTERA				98.99	1.996	48.	96.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			195.83	2.292	24.	55.	
INSECTA	PLECOPTERA	PERLODIDAE	KOGOTUS		12.91	1.111	18.	20.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		68.86	1.838	48.	88.	
INSECTA	PLECOPTERA	CAPNIIDAE			10.76	1.032	32.	33.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		2040.10	3.310	16.	53.	
INSECTA	PLECOPTERA	PERLIDAE	CALINEURIA		25.82	1.412	24.	34.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		8.61	0.935	6.	6.	
INSECTA	PLECOPTERA	PERLIDAE			8.61	0.935	24.	22.	
INSECTA	TRICHOPTERA				8.61	0.935	72.	67.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		49.50	1.695	108.	183.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		71.02	1.851	18.	33.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		200.14	2.301	24.	55.	
INSECTA	COLEOPTERA	ELMIDAE			344.32	2.537	104.	264.	
INSECTA	ODONATA	GOMPHIDAE			4.30	0.634	108.	68.	
INSECTA	DIPTERA				49.50	1.695	108.	183.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	17.22	1.236	24.	30.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		27.98	1.447	24.	35.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		23.87	1.374	36.	49.	
INSECTA	DIPTERA	SIMULIIDAE			36.58	1.563	108.	169.	
INSECTA	DIPTERA	CHIRONOMIDAE			1370.82	3.137	108.	339.	
INSECTA	DIPTERA	EMPIDIDAE			15.06	1.178	95.	112.	
INSECTA	DIPTERA	CERATOPOGONIDAE			92.54	1.966	108.	212.	
INSECTA	DIPTERA	DIXIDAE			8.61	0.935	108.	101.	
INSECTA	DIPTERA	TIPULIDAE	MOLOPHILUS		137.73	2.139	72.	154.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	8.61	0.935	30.	28.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		8.61	0.935	36.	34.	
CRUSTACEA	COPEPODA				241.02	2.382	108.	257.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		8.61	0.935	108.	101.	
OLIGOCHAETA					193.68	2.287	108.	247.	
ARACHNIDA	HYDRACARINA				253.94	2.405	98.	238.	
NEMATODA					264.70	2.423	108.	262.	
TOTALS					6953.11	3.842			0.65

## TOTAL SAMPLE STATISTICS

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT) LL	UL	STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
* NUMBERS DATA											
5	44	7435.	6772.	8099.	987.98	5.82	13.02	4.0283	0.2635	56.	58.



## SPECIES ANALYSES

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		320.65	2.508	21.	53.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		269.00	2.430	30.	73.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		12.91	1.111	21.	23.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	10.76	1.032	18.	19.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	8.61	0.935	48.	45.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	131.27	2.118	2.	4.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	269.00	2.430	24.	58.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	SPINIFERA	8.61	0.935	24.	22.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		350.78	2.545	24.	61.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		172.18	2.238	48.	107.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		275.46	2.440	72.	176.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	49.50	1.695	24.	41.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			159.25	2.202	24.	53.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		6.46	0.810	12.	10.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		43.04	1.634	16.	26.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	51.65	1.713	18.	31.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		15.06	1.178	6.	7.	
INSECTA	PLECOPTERA	LEUCTRIDAE			60.26	1.780	18.	32.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		47.34	1.675	108.	181.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE	ALLOPERLA		55.95	1.748	24.	42.	
INSECTA	PLECOPTERA	PERLIDAE			6.46	0.810	24.	19.	
INSECTA	TRICHOPTERA				12.91	1.111	72.	80.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		103.30	2.014	108.	218.	
INSECTA	TRICHOPTERA	LIMNIPHILIDAE			66.71	1.824	108.	197.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		68.86	1.838	18.	33.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		94.69	1.978	24.	47.	
INSECTA	TRICHOPTERA	LEPIDOSTOMATIDAE			8.61	0.935	18.	17.	
INSECTA	COLEOPTERA	ELMIDAE			925.36	2.966	104.	308.	
INSECTA	DIPTERA				25.82	1.412	108.	152.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	178.62	2.252	24.	54.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		19.37	1.287	36.	46.	
INSECTA	DIPTERA	SIMULIIDAE			19.37	1.287	108.	139.	
INSECTA	DIPTERA	CHIRONOMIDAE			1471.97	3.168	108.	342.	
INSECTA	DIPTERA	EMPIDIDAE			34.43	1.537	95.	146.	
INSECTA	DIPTERA	CERATOPOGONIDAE			83.93	1.924	108.	208.	
INSECTA	DIPTERA	TIPULIDAE			15.06	1.178	72.	85.	
CRUSTACEA	COPEPODA				27.98	1.447	108.	158.	
CRUSTACEA	OSTRACODA				79.62	1.901	108.	205.	
GASTROPODA					4.30	0.634	96.	61.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		4.30	0.634	108.	68.	
OLIGOCHAETA					994.22	2.997	108.	324.	
ARACHNIDA	HYDRACARINA				847.89	2.928	98.	287.	
NEMATODA					6.46	0.810	108.	87.	
TOTALS					7435.16	3.871			1.10

# TOTAL SAMPLE STATISTICS

STATION: 9.6

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	44	7949.	4811.	11088.	4578.04	25.75	57.59	3.9532	0.2764	60.	61.

## SPECIES ANALYSES

STATION: 9.8

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 07 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		148.49	2.172	21.	46.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		266.85	2.426	30.	73.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	53.80	1.731	48.	83.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	411.03	2.614	24.	63.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		684.97	2.823	24.	68.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		49.50	1.695	48.	81.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		535.85	2.729	72.	196.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	MARGARITA	17.22	1.236	24.	30.	
INSECTA	PLECOPTERA				51.65	1.713	48.	82.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			193.68	2.287	24.	55.	
INSECTA	PLECOPTERA	CAPNIIDAE			25.82	1.412	32.	45.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		27.98	1.447	16.	23.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		114.08	2.057	6.	12.	
INSECTA	PLECOPTERA	LEUCTRIDAE			109.75	2.040	18.	37.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOGENOIDES		6.46	0.810	24.	19.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		34.43	1.537	108.	166.	
INSECTA	PLECOPTERA	PERLODIDAE			17.22	1.236	48.	59.	
INSECTA	TRICHOPTERA				27.98	1.447	72.	104.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		36.58	1.563	108.	169.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		32.28	1.509	24.	36.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		230.26	2.362	18.	43.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		40.89	1.612	24.	39.	
INSECTA	TRICHOPTERA	LEPIDOSTOMATIDAE			8.61	0.935	18.	17.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		6.46	0.810	108.	87.	
INSECTA	COLEOPTERA	ELMIDAE			1235.25	3.092	104.	322.	
INSECTA	COLEOPTERA	HYDROPHILIDAE			8.61	0.935	72.	67.	
INSECTA	DIPTERA	TIPULIDAE			8.61	0.935	72.	67.	
INSECTA	DIPTERA				15.06	1.178	108.	127.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	165.70	2.219	24.	53.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		75.32	1.877	36.	68.	
INSECTA	DIPTERA	SIMULIIDAE			120.51	2.081	108.	225.	
INSECTA	DIPTERA	CHIRONOMIDAE			2074.53	3.317	108.	358.	
INSECTA	DIPTERA	EMPIDIDAE			4.30	0.634	95.	60.	
INSECTA	DIPTERA	CERATOPOGONIDAE			111.90	2.049	108.	221.	
INSECTA	DIPTERA	PSYCHODIDAE	PERICOMA		17.22	1.236	36.	44.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	8.61	0.935	30.	28.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		8.61	0.935	36.	34.	
INSECTA	DIPTERA	EMPIDIDAE	OREOGETON		60.26	1.780	95.	169.	
CRUSTACEA	COPEPODA				103.30	2.014	108.	218.	
CRUSTACEA	OSTRACODA				64.56	1.810	108.	195.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		40.89	1.612	108.	174.	
OLIGOCHAETA					365.84	2.563	108.	277.	
ARACHNIDA	HYDRACARINA				324.95	2.512	98.	246.	
NEMATODA					23.87	1.374	108.	148.	
TOTALS					7949.49	3.900			1.20

# TOTAL SAMPLE STATISTICS

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	44	5884.	4093.	7235.	2292.13	18.10	40.47	3.5448	0.3523	59.	61.

## SPECIES ANALYSES

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		75.32	1.877	21.	39.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		316.34	2.500	30.	75.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	15.06	1.178	48.	57.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	30.13	1.479	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	6.46	0.810	24.	19.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		17.22	1.236	24.	30.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		51.65	1.713	48.	82.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		434.70	2.638	72.	190.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	25.82	1.412	24.	34.	
INSECTA	PLECOPTERA				19.37	1.287	48.	62.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			191.53	2.282	24.	55.	
INSECTA	PLECOPTERA	PERLODIDAE	KOGOTUS		4.30	0.634	18.	11.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		432.55	2.636	16.	42.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	2.15	0.333	18.	6.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		8.61	0.935	6.	8.	
INSECTA	PLECOPTERA	LEUCTRIDAE			43.04	1.634	18.	29.	
INSECTA	PLECOPTERA	PERLIDAE	CLAASSENIA	SABULOSA	4.30	0.634	6.	4.	
INSECTA	PLECOPTERA	PERLIDAE			6.46	0.810	24.	19.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOGENOIDES		2.15	0.333	24.	8.	
INSECTA	TRICHOPTERA				12.91	1.111	72.	80.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		34.43	1.537	108.	166.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	CHEUMATOPSYCHE		4.30	0.634	108.	68.	
INSECTA	TRICHOPTERA	LIMNIPHILIDAE			4.30	0.634	108.	68.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		81.78	1.913	18.	34.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		66.71	1.824	24.	44.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		2.15	0.333	108.	36.	
INSECTA	COLEOPTERA	ELMIDAE			466.98	2.669	104.	278.	
INSECTA	ODONATA				8.61	0.935	90.	84.	
INSECTA	DIPTERA				4.30	0.634	108.	68.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	19.37	1.287	24.	31.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		27.98	1.447	24.	35.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		8.61	0.935	36.	34.	
INSECTA	DIPTERA	SIMULIIDAE			23.87	1.374	108.	148.	
INSECTA	DIPTERA	CHIRONOMIDAE			1039.42	3.017	108.	326.	
INSECTA	DIPTERA	EMPIDIDAE			12.91	1.111	95.	106.	
INSECTA	DIPTERA	CERATOPOGONIDAE			58.10	1.764	108.	191.	
INSECTA	DIPTERA	DIXIDAE			2.15	0.333	108.	36.	
INSECTA	DIPTERA	TIPULIDAE			40.89	1.612	72.	116.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		6.46	0.810	36.	29.	
CRUSTACEA	COPEPODA				6.46	0.810	108.	87.	
OLIGOCHAETA					1624.76	3.211	108.	347.	
ARACHNIDA	HYDRACARINA				236.72	2.374	98.	233.	
NEMATODA					178.62	2.252	108.	243.	
CRUSTACEA	DECAPODA				4.30	0.634	108.	68.	
TOTALS					5664.06	3.753			1.20

(c. ny fish)

# TOTAL SAMPLE STATISTICS

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	37	14061.	10795.	17327.	4763.89	15.15	33.88	3.9924	0.2337	55.	57.

## SPECIES ANALYSES

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		671.42	2.827	21.	59.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		550.91	2.741	30.	82.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		34.43	1.537	21.	32.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	103.30	2.014	48.	97.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	68.86	1.838	2.	4.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	503.57	2.702	24.	65.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		1050.18	3.021	24.	73.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		335.71	2.526	48.	121.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		439.01	2.642	72.	190.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	51.65	1.713	24.	41.	
INSECTA	PLECOPTERA				8.61	0.935	48.	45.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			516.48	2.713	24.	65.	
INSECTA	PLECOPTERA	PTERONARCYIDAE	PTERONARCYS	CALIFORNICA	17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	CAPNIIDAE			120.51	2.081	32.	67.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		34.43	1.537	16.	25.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		68.86	1.838	6.	11.	
INSECTA	PLECOPTERA	LEUCTRIDAE			146.34	2.165	18.	39.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA	CATARACTAE	137.73	2.139	108.	231.	
INSECTA	PLECOPTERA	PERLIDAE			111.90	2.049	24.	49.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		172.16	2.236	108.	241.	
INSECTA	TRICHOPTERA	LIMNAPHILIDAE			17.22	1.236	108.	133.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		8.61	0.935	24.	22.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		103.30	2.014	18.	36.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		103.30	2.014	24.	48.	
INSECTA	COLEOPTERA	ELMIDAE			1127.65	3.052	104.	317.	
INSECTA	DIPTERA				17.22	1.236	108.	133.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	301.28	2.479	24.	59.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		17.22	1.236	36.	44.	
INSECTA	DIPTERA	SIMULIIDAE			25.82	1.412	108.	152.	
INSECTA	DIPTERA	CHIRONOMIDAE			1669.95	3.223	108.	348.	
INSECTA	DIPTERA	EMPIDIDAE			464.83	2.667	95.	253.	
INSECTA	DIPTERA	CERATOPOGONIDAE			146.34	2.165	108.	234.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	34.43	1.537	30.	46.	
CRUSTACEA	COPEPODA				43.04	1.634	108.	176.	
CRUSTACEA	OSTRACODA				154.94	2.190	108.	237.	
OLIGOCHAETA					2685.70	3.429	108.	370.	
ARACHNIDA	HYDRACARINA				1997.06	3.300	98.	323.	
TOTALS					14061.17	4.148			1.10

## TOTAL SAMPLE STATISTICS

STATION: 9.6

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT) LL                      UL	STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
* NUMBERS DATA										
5	46	16078.	13291.                      18864.	4064.79	11.31	25.28	3.6110	0.3468	53.	58.



## SPECIES ANALYSES

STATION: 9.8

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 08 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		266.85	2.426	21.	51.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		288.37	2.460	30.	74.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		15.06	1.178	21.	25.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	SOQUELE	430.40	2.634	48.	126.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	19.37	1.287	18.	23.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	60.26	1.780	48.	85.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	79.62	1.901	2.	4.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	671.42	2.827	24.	68.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		695.10	2.842	24.	68.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		17.22	1.236	48.	59.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		1009.29	3.004	72.	218.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	15.06	1.178	24.	28.	
INSECTA	PLECOPTERA				8.61	0.935	48.	45.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			619.78	2.792	24.	67.	
INSECTA	PLECOPTERA	PERLODIDAE	MEGARCYS		25.82	1.412	24.	34.	
INSECTA	PLECOPTERA	PTERONARCYIDAE	PTERONARCYS	CALIFORNICA	2.15	0.333	18.	6.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		182.92	2.262	18.	36.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	10.76	1.032	18.	19.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		6.46	0.810	6.	5.	
INSECTA	PLECOPTERA	PELTOPERLIDAE	YORAPERLA		17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	LEUCTRIDAE			191.53	2.282	18.	41.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		122.66	2.089	108.	226.	
INSECTA	PLECOPTERA	PERLIDAE			25.82	1.412	24.	34.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		77.47	1.889	108.	204.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		232.42	2.368	24.	57.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		180.77	2.257	18.	41.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		6.46	0.810	24.	19.	
INSECTA	TRICHOPTERA	LEPIDOSTOMATIDAE			17.22	1.236	18.	22.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	ATOPSYCHE		6.46	0.810	18.	15.	
INSECTA	COLEOPTERA	ELMIDAE			2952.54	3.470	104.	381.	
INSECTA	DIPTERA				17.22	1.236	108.	133.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	391.66	2.593	24.	62.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		96.84	1.986	36.	71.	
INSECTA	DIPTERA	SIMULIIDAE			53.80	1.731	108.	187.	
INSECTA	DIPTERA	CHIRONOMIDAE			5334.81	3.727	108.	403.	
INSECTA	DIPTERA	EMPIDIDAE			77.47	1.889	95.	179.	
INSECTA	DIPTERA	CERATOPOGONIDAE			94.89	1.976	108.	213.	
INSECTA	DIPTERA	TIPULIDAE			17.22	1.236	72.	89.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	17.22	1.236	30.	37.	
CRUSTACEA	COPEPODA				135.58	2.132	108.	230.	
CRUSTACEA	OSTRACODA				294.82	2.470	108.	267.	
GASTROPODA		LYMNAEIDAE	LYMNAEA		51.65	1.713	108.	185.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		109.75	2.040	108.	220.	
OLIGOCHAETA					111.90	2.049	108.	221.	
ARACHNIDA	HYDRACARINA				931.82	2.969	98.	291.	
NEMATODA					86.08	1.935	108.	209.	
TOTALS					16077.59	4.206			1.60

# TOTAL SAMPLE STATISTICS

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 08 09 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	38	5881.	3173.	8190.	3658.62	28.80	64.40	3.7998	0.2769	59.	62.

## SPECIES ANALYSES

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 09 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		217.35	2.337	21.	49.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		124.82	2.096	30.	63.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	51.65	1.713	48.	82.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	15.06	1.178	2.	2.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	8.61	0.935	24.	22.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		12.91	1.111	24.	27.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		122.68	2.089	48.	100.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		542.30	2.734	72.	197.	
INSECTA	PLECOPTERA				23.67	1.374	48.	66.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			189.38	2.277	24.	55.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		4.30	0.634	48.	30.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		763.96	2.883	18.	46.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	25.82	1.412	18.	25.	
INSECTA	PLECOPTERA	NEMOURIDAE	MALENKA		58.10	1.764	38.	64.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		17.22	1.236	6.	7.	
INSECTA	PLECOPTERA	LEUCTRIDAE			94.69	1.976	18.	36.	
INSECTA	PLECOPTERA	PERLIDAE			2.15	0.333	24.	8.	
INSECTA	TRICHOPTERA				34.43	1.537	72.	111.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		32.28	1.509	108.	163.	
INSECTA	TRICHOPTERA	LIMNephilidae			17.22	1.236	108.	133.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		71.02	1.851	18.	33.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		83.93	1.924	24.	46.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		8.61	0.935	108.	101.	
INSECTA	COLEOPTERA	ELMIDAE			331.41	2.520	104.	262.	
INSECTA	ODONATA	GOMPHIDAE			30.13	1.479	108.	160.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	10.76	1.032	24.	25.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		8.61	0.935	24.	22.	
INSECTA	DIPTERA	SIMULIIDAE			182.92	2.262	108.	244.	
INSECTA	DIPTERA	CHIRONOMIDAE			1659.19	3.220	108.	348.	
INSECTA	DIPTERA	EMPIDIDAE			21.52	1.333	95.	127.	
INSECTA	DIPTERA	CERATOPOGONIDAE			25.82	1.412	108.	152.	
INSECTA	DIPTERA	TIPULIDAE			25.82	1.412	72.	102.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		23.67	1.374	36.	49.	
CRUSTACEA	COPEPODA				122.68	2.089	108.	226.	
GASTROPODA					6.46	0.810	96.	78.	
OLIGOCHAETA					284.06	2.453	108.	265.	
ARACHNIDA	HYDRACARINA				292.67	2.466	98.	242.	
NEMATODA					133.42	2.125	108.	230.	
TOTALS					5681.28	3.754			0.66

## TOTAL SAMPLE STATISTICS

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 08 09 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT) LL	UL	STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
* NUMBERS DATA											
5	45	8066.	7421.	8710.	940.43	5.21	11.66	3.9994	0.2720	58.	57.

## SPECIES ANALYSES

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 09 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		154.94	2.190	21.	46.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		361.54	2.558	30.	77.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		17.22	1.236	21.	26.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	25.82	1.412	48.	68.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	94.69	1.976	2.	4.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	210.90	2.324	24.	56.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		542.30	2.734	24.	66.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		223.81	2.350	48.	113.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		241.02	2.382	72.	172.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	180.77	2.257	24.	54.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	HECUBA	4.30	0.634	48.	30.	
INSECTA	PLECOPTERA				30.13	1.479	48.	71.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			352.93	2.548	24.	61.	
INSECTA	PLECOPTERA	PERLODIDAE	KOGOTUS		4.30	0.634	18.	11.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		17.22	1.236	48.	59.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		43.04	1.634	16.	26.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	47.34	1.675	18.	30.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		21.52	1.333	6.	8.	
INSECTA	PLECOPTERA	LEUCTRIDAE			185.07	2.267	18.	41.	
INSECTA	PLECOPTERA	PERLIDAE			25.82	1.412	24.	34.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA	CATARACTAE	17.22	1.236	108.	133.	
INSECTA	PLECOPTERA	PERLIDAE	CLAASSENIA	SABULOSA	4.30	0.634	6.	4.	
INSECTA	TRICHOPTERA				25.82	1.412	72.	102.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		111.90	2.049	108.	221.	
INSECTA	TRICHOPTERA	LIMNIPHILIDAE			21.52	1.333	108.	144.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		25.82	1.412	24.	34.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		64.56	1.810	18.	33.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		86.08	1.935	24.	46.	
INSECTA	COLEOPTERA	ELMIDAE			1127.65	3.052	104.	317.	
INSECTA	DIPTERA				4.30	0.634	108.	68.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	202.29	2.306	24.	55.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		43.04	1.634	36.	59.	
INSECTA	DIPTERA	CHIRONOMIDAE			1876.54	3.273	108.	354.	
INSECTA	DIPTERA	EMPIDIDAE			30.13	1.479	95.	141.	
INSECTA	DIPTERA	CERATOPOGONIDAE			81.78	1.913	108.	207.	
INSECTA	DIPTERA	TABANIDAE			4.30	0.634	108.	68.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	25.82	1.412	30.	42.	
INSECTA	DIPTERA	TIPULIDAE			4.30	0.634	72.	46.	
CRUSTACEA	COPEPODA				25.82	1.412	108.	152.	
CRUSTACEA	OSTRACODA				25.82	1.412	108.	152.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		8.61	0.935	108.	101.	
OLIGOCHAETA					550.91	2.741	108.	298.	
ARACHNIDA	HYDRACARINA				865.10	2.937	98.	288.	
NEMATODA					34.43	1.537	108.	166.	
GASTROPODA		LYMNAEIDAE	LYMNAEA		12.91	1.111	108.	120.	
TOTALS					8065.70	3.907			1.10

## TOTAL SAMPLE STATISTICS

STATION: 9.6

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 09 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	42	6934.	3857.	10010.	4487.18	28.94	64.72	3.9474	0.2687	55.	58.

## SPECIES ANALYSES

STATION: 9.8

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 09 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		316.34	2.500	21.	53.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		96.84	1.988	30.	60.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		17.22	1.236	21.	26.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	6.46	0.810	18.	15.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	17.22	1.236	2.	2.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	120.51	2.081	24.	50.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	SOQUELE	8.61	0.935	48.	45.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		436.86	2.640	24.	63.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		617.62	2.791	72.	201.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	86.08	1.935	24.	46.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	120.51	2.081	24.	50.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			277.61	2.443	24.	59.	
INSECTA	PLECOPTERA	PERLODIDAE	SKWALA	PARALLELA	17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		111.90	2.049	48.	98.	
INSECTA	PLECOPTERA	PTERONARCYIDAE	PTERONARCYS	CALIFORNICA	51.85	1.713	18.	31.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		17.22	1.236	16.	20.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	8.61	0.935	18.	17.	
INSECTA	PLECOPTERA	NEMOURIDAE	MALENKA		17.22	1.236	36.	44.	
INSECTA	PLECOPTERA	PELTOPTERLIDAE	YORAPERLA		15.06	1.178	24.	28.	
INSECTA	PLECOPTERA	LEUCTRIDAE			131.27	2.118	18.	38.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		137.73	2.139	108.	231.	
INSECTA	TRICHOPTERA				6.46	0.810	72.	58.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		172.18	2.236	108.	241.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	MOSELYANA		8.61	0.935	108.	101.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		75.32	1.877	24.	45.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		111.90	2.049	18.	37.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		66.71	1.824	24.	44.	
INSECTA	COLEOPTERA	ELMIDAE			600.41	2.778	104.	289.	
INSECTA	MEGALOPTERA	SIALIDAE	SIALIS		6.46	0.810	72.	58.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	71.02	1.851	24.	44.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		34.43	1.537	36.	55.	
INSECTA	DIPTERA	SIMULIIDAE			148.49	2.172	108.	235.	
INSECTA	DIPTERA	CHIRONOMIDAE			2179.98	3.338	108.	361.	
INSECTA	DIPTERA	EMPIDIDAE			86.08	1.935	96.	184.	
INSECTA	DIPTERA	CERATOPOGONIDAE			51.85	1.713	108.	185.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		25.82	1.412	36.	51.	
CRUSTACEA	COPEPODA				30.13	1.479	108.	160.	
CRUSTACEA	OSTRACODA				154.94	2.190	108.	237.	
GASTROPODA		LYMNAEIDAE	LYMNAEA		8.61	0.935	108.	101.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		32.28	1.509	108.	163.	
OLIGOCHAETA					53.80	1.731	108.	187.	
ARACHNIDA	HYDRACARINA				378.75	2.578	98.	253.	
TOTALS					6933.74	3.841			0.95

# TOTAL SAMPLE STATISTICS

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	42	6320.	5157.	7484.	1698.51	12.00	26.84	3.7682	0.3020	55.	58.



## SPECIES ANALYSES

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	6.46	0.810	24.	19.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		367.99	2.566	21.	54.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		213.05	2.328	30.	70.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	10.76	1.032	48.	50.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	66.71	1.824	2.	4.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	36.58	1.563	24.	38.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		6.46	0.810	24.	19.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		439.01	2.642	48.	127.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		606.86	2.783	72.	200.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	10.76	1.032	24.	25.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	HECUBA	64.56	1.810	48.	87.	
INSECTA	PLECOPTERA				53.80	1.731	48.	83.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			118.36	2.073	24.	50.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		1000.68	3.000	18.	48.	
INSECTA	PLECOPTERA	PERLIDAE	CALINEURIA		6.46	0.810	24.	19.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	8.61	0.935	18.	17.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		60.26	1.780	6.	11.	
INSECTA	PLECOPTERA	PERLIDAE			15.06	1.178	24.	28.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOGENOIDES		8.61	0.935	24.	22.	
INSECTA	TRICHOPTERA				10.76	1.032	72.	74.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		40.89	1.612	108.	174.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHE		6.46	0.810	18.	15.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	PARAPSYCHE		6.46	0.810	6.	5.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		53.80	1.731	18.	31.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		124.82	2.098	24.	50.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	HYDROPTILA		8.61	0.935	108.	101.	
INSECTA	COLEOPTERA	ELMIDAE			273.30	2.437	104.	253.	
INSECTA	ODONATA				6.46	0.810	90.	73.	
INSECTA	DIPTERA				6.46	0.810	108.	87.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		6.46	0.810	24.	19.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		8.61	0.935	36.	34.	
INSECTA	DIPTERA	SIMULIIDAE			213.05	2.328	108.	251.	
INSECTA	DIPTERA	CHIRONOMIDAE			1801.09	3.204	108.	346.	
INSECTA	DIPTERA	EMPIDIDAE			32.28	1.509	95.	143.	
INSECTA	DIPTERA	DIXIDAE			6.46	0.810	108.	87.	
INSECTA	DIPTERA	TIPULIDAE			17.22	1.238	72.	89.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		34.43	1.537	36.	55.	
CRUSTACEA	COPEPODA				34.43	1.537	108.	166.	
PELECYPODA					6.46	0.810	108.	87.	
OLIGOCHAETA					51.65	1.713	108.	185.	
ARACHNIDA	HYDRACARINA				447.62	2.651	98.	260.	
NEMATODA					221.66	2.346	108.	253.	
TOTALS					6320.42	3.801			0.56

# TOTAL SAMPLE STATISTICS

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	51	7693.	6403.	8984.	1882.39	10.94	24.47	3.8683	0.3187	54.	54.

## SPECIES ANALYSES

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	4.30	0.634	24.	15.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		189.38	2.277	21.	48.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		238.87	2.378	30.	71.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	MARGARITA	10.78	1.032	24.	25.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	23.67	1.374	48.	66.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	19.37	1.287	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	111.90	2.049	24.	49.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	SPINIFERA	8.61	0.935	24.	22.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		751.05	2.876	24.	69.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		413.18	2.618	48.	128.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		170.01	2.230	72.	161.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	116.21	2.065	24.	50.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	HECUBA	4.30	0.634	48.	30.	
INSECTA	PLECOPTERA				55.95	1.748	48.	84.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			344.32	2.537	24.	61.	
INSECTA	PLECOPTERA	PERLODIDAE	KOGOTUS		10.78	1.032	18.	19.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		17.22	1.238	48.	59.	
INSECTA	PLECOPTERA	CAPNIIDAE			68.86	1.838	32.	59.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		131.27	2.118	18.	34.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	12.91	1.111	18.	20.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		17.22	1.238	8.	7.	
INSECTA	PLECOPTERA	LEUCTRIDAE			109.75	2.040	18.	37.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOGENOIDES		8.61	0.935	24.	22.	
INSECTA	PLECOPTERA	PERLIDAE			51.85	1.713	24.	41.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		10.78	1.032	108.	111.	
INSECTA	TRICHOPTERA				8.61	0.935	72.	67.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		17.22	1.238	108.	133.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE			6.46	0.810	108.	87.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	ONOCOSMOECUS		4.30	0.634	18.	11.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	OLIGOPHLEBODES		6.46	0.810	24.	19.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		8.61	0.935	24.	22.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		45.19	1.655	18.	30.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		81.78	1.913	24.	46.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	HIMALOPSYCHE		12.91	1.111	18.	20.	
INSECTA	TRICHOPTERA	LIMNEPHILIDAE	NEOPHYLAX		36.58	1.563	24.	38.	
INSECTA	COLEOPTERA	ELMIDAE			1134.10	3.055	104.	318.	
INSECTA	DIPTERA				51.85	1.713	108.	185.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	200.14	2.301	24.	55.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		25.82	1.412	36.	51.	
INSECTA	DIPTERA	SIMULIIDAE			10.78	1.032	108.	111.	
INSECTA	DIPTERA	CHIRONOMIDAE			1816.29	3.259	108.	352.	
INSECTA	DIPTERA	EMPIDIDAE			8.61	0.935	95.	89.	
INSECTA	DIPTERA	CERATOPOGONIDAE			49.50	1.695	108.	183.	
INSECTA	DIPTERA	TIPULIDAE			17.22	1.238	72.	89.	
CRUSTACEA	COPEPODA				43.04	1.634	108.	176.	
CRUSTACEA	OSTRACODA				38.74	1.588	108.	172.	
GASTROPODA		LYMNAEIDAE	LYMNAEA		6.46	0.810	108.	87.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		25.82	1.412	108.	152.	
OLIGOCHAETA					23.67	1.374	108.	148.	
ARACHNIDA	HYDRACARINA				1088.91	3.037	98.	298.	
NEMATODA					23.67	1.374	108.	148.	
TOTALS					7693.40	3.886			1.00

# TOTAL SAMPLE STATISTICS

STATION: 9.8

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	49	15798.	13125.	18466.	3895.27	11.03	24.66	4.0938	0.2718	54.	55.

## SPECIES ANALYSES

STATION: 9.8

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 06 15 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		413.18	2.616	24.	63.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		309.89	2.491	30.	75.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	34.43	1.537	18.	28.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	77.47	1.889	48.	91.	
INSECTA	EPHEMEROPTERA	EPHEMERIDAE	EPHEMERELLA	DODDSI	34.43	1.537	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERIDAE	EPHEMERELLA	TIBIALIS	503.57	2.702	24.	65.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		1433.23	3.156	24.	76.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		258.24	2.412	48.	116.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		1747.42	3.242	72.	233.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	17.22	1.236	24.	30.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TERESA	611.17	2.786	24.	67.	
INSECTA	PLECOPTERA				61.66	1.713	48.	82.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			588.13	2.754	24.	68.	
INSECTA	PLECOPTERA	PERLODIDAE	MEGARCYS		17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		17.22	1.236	12.	15.	
INSECTA	PLECOPTERA	PTERONARCYIDAE	PTERONARCYS	CALIFORNICA	17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		344.32	2.537	16.	41.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		189.38	2.277	8.	14.	
INSECTA	PLECOPTERA	PELTOPTERIDAE	YORAPERLA		77.47	1.889	24.	45.	
INSECTA	PLECOPTERA	LEUCTRIDAE			215.20	2.333	18.	42.	
INSECTA	PLECOPTERA	PERLIDAE			17.22	1.236	24.	30.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		180.77	2.257	108.	244.	
INSECTA	PLECOPTERA	PERLODIDAE			43.04	1.634	48.	78.	
INSECTA	TRICHOPTERA				8.61	0.935	72.	87.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		17.22	1.236	108.	133.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	PARAPSYCHE		8.61	0.935	6.	6.	
INSECTA	TRICHOPTERA	LIMNIPHILIDAE			17.22	1.236	108.	133.	
INSECTA	TRICHOPTERA	LIMNIPHILIDAE	OLIGOPHLEBODES		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		258.24	2.412	24.	58.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		292.67	2.466	18.	44.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	LEPIDOSTOMATIDAE			8.61	0.935	18.	17.	
INSECTA	TRICHOPTERA	LEPIDOSTOMATIDAE			17.22	1.236	18.	22.	
INSECTA	COLEOPTERA	ELMIDAE			1704.38	3.232	104.	338.	
INSECTA	COLEOPTERA	HYDROPHILIDAE	AMETOR		17.22	1.236	72.	89.	
INSECTA	DIPTERA				8.61	0.935	108.	101.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	180.77	2.257	24.	54.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		34.43	1.537	36.	55.	
INSECTA	DIPTERA	SIMULIIDAE			77.47	1.889	108.	204.	
INSECTA	DIPTERA	CHIRONOMIDAE			3641.18	3.561	108.	385.	
INSECTA	DIPTERA	EMPIDIDAE			60.26	1.780	95.	169.	
INSECTA	DIPTERA	CERATOPOGONIDAE			232.42	2.366	108.	256.	
CRUSTACEA	COPEPODA				671.42	2.827	108.	305.	
CRUSTACEA	OSTRACODA				241.02	2.382	108.	257.	
GASTROPODA					25.82	1.412	98.	136.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		17.22	1.236	108.	133.	
OLIGOCHAETA					86.08	1.935	108.	209.	
ARACHNIDA	HYDRACARINA				886.62	2.948	98.	289.	
NEMATODA					68.86	1.838	108.	199.	
TOTALS					15795.68	4.199			0.94

## TOTAL SAMPLE STATISTICS

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 07 07 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	42	9103.	7555.	10651.	2257.65	11.09	24.80	3.7600	0.3036	62.	60.

## SPECIES ANALYSES

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 07 07 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA				34.43	1.537	64.	98.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		423.94	2.627	21.	55.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		518.63	2.715	30.	81.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	HEPTAGENIA		8.61	0.935	54.	50.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	120.51	2.081	2.	4.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		83.93	1.924	24.	46.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		62.41	1.795	48.	86.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		600.41	2.778	72.	200.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	8.61	0.935	24.	22.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	HECUBA	17.22	1.236	48.	59.	
INSECTA	PLECOPTERA				51.65	1.713	48.	82.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			241.02	2.382	24.	57.	
INSECTA	PLECOPTERA	CAPNIIDAE			8.61	0.935	32.	30.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		2401.63	3.381	16.	54.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		51.65	1.713	8.	10.	
INSECTA	PLECOPTERA	PERLIDAE			34.43	1.537	24.	37.	
INSECTA	TRICHOPTERA				25.82	1.412	72.	102.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		25.82	1.412	108.	152.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		58.10	1.764	24.	42.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		174.31	2.241	18.	40.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		464.83	2.667	24.	84.	
INSECTA	COLEOPTERA	ELMIDAE			432.55	2.636	104.	274.	
INSECTA	ODONATA				6.46	0.810	90.	73.	
INSECTA	ODONATA	GOMPHIDAE	OPHIOGOMPHUS		8.61	0.935	108.	101.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	6.46	0.810	30.	24.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		34.43	1.537	24.	37.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		8.61	0.935	36.	34.	
INSECTA	DIPTERA	SIMULIIDAE			94.69	1.976	108.	213.	
INSECTA	DIPTERA	CHIRONOMIDAE			1542.98	3.188	108.	344.	
INSECTA	DIPTERA	CERATOPOGONIDAE			34.43	1.537	108.	166.	
INSECTA	DIPTERA	PSYCHODIDAE	PERICOMA		34.43	1.537	36.	55.	
INSECTA	DIPTERA	DIXIDAE			25.82	1.412	108.	152.	
INSECTA	DIPTERA	TIPULIDAE			15.06	1.178	72.	85.	
INSECTA	ODONATA	GOMPHIDAE			17.22	1.236	108.	133.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		34.43	1.537	36.	55.	
CRUSTACEA	COPEPODA				144.18	2.159	108.	233.	
CRUSTACEA	OSTRACODA				8.61	0.935	108.	101.	
GASTROPODA		LYMNAEIDAE	LYMNAEA		10.76	1.032	108.	111.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		8.61	0.935	108.	101.	
OLIGOCHAETA					699.40	2.845	108.	307.	
ARACHNIDA	HYDRACARINA				432.55	2.636	98.	258.	
NEMATODA					86.08	1.935	108.	209.	
TOTALS					9102.96	3.959			0.73

# TOTAL SAMPLE STATISTICS

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 07 07 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	40	9885.	7624.	12106.	3268.97	14.82	33.14	4.0277	0.2432	55.	55.



# TOTAL SAMPLE STATISTICS

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 08 07 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	43	6953.	5456.	8450.	2183.83	14.05	31.41	3.7290	0.3137	58.	59.

## SPECIES ANALYSES

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 07 07 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	94.69	1.976	24.	47.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		111.90	2.049	21.	43.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		249.83	2.397	30.	72.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	17.22	1.236	18.	22.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	25.82	1.412	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	163.55	2.214	24.	53.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		895.23	2.952	24.	71.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		172.16	2.236	48.	107.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		387.36	2.588	72.	186.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	HECUBA	34.43	1.537	48.	74.	
INSECTA	PLECOPTERA				86.08	1.935	48.	93.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			370.14	2.568	24.	62.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		43.04	1.634	12.	20.	
INSECTA	PLECOPTERA	CAPNIIDAE			68.86	1.838	32.	59.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		714.46	2.854	16.	46.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	111.90	2.049	18.	37.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		258.24	2.412	6.	14.	
INSECTA	PLECOPTERA	LEUCTRIDAE			103.30	2.014	18.	36.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		17.22	1.236	108.	133.	
INSECTA	PLECOPTERA	PERLIDAE	CLAASSENIA	SABULOSA	17.22	1.236	8.	7.	
INSECTA	TRICHOPTERA				8.61	0.935	72.	87.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		51.65	1.713	108.	185.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		25.82	1.412	24.	34.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		94.69	1.976	18.	36.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		232.42	2.366	24.	57.	
INSECTA	COLEOPTERA	ELMIDAE			740.29	2.869	104.	298.	
INSECTA	DIPTERA				17.22	1.236	108.	133.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	25.82	1.412	24.	34.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		34.43	1.537	24.	37.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		103.30	2.014	36.	73.	
INSECTA	DIPTERA	SIMULIIDAE			103.30	2.014	108.	218.	
INSECTA	DIPTERA	CHIRONOMIDAE			2143.39	3.331	108.	360.	
INSECTA	DIPTERA	EMPIDIDAE			25.82	1.412	95.	134.	
INSECTA	DIPTERA	CERATOPOGONIDAE			34.43	1.537	108.	166.	
INSECTA	DIPTERA	DIXIDAE			43.04	1.634	108.	176.	
CRUSTACEA	COPEPODA				8.61	0.935	108.	101.	
CRUSTACEA	OSTRACODA				77.47	1.889	108.	204.	
OLIGOCHAETA					1446.14	3.160	108.	341.	
ARACHNIDA	HYDRACARINA				645.60	2.810	98.	275.	
NEMATODA					60.26	1.780	108.	192.	
TOTALS					9864.77	3.994			0.86

# TOTAL SAMPLE STATISTICS

STATION: 9.6

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 07 07 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	45	12677.	9054.	16300.	5284.62	18.64	41.69	3.9478	0.2818	52.	54.

## SPECIES ANALYSES

STATION: 9.8

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 07 07 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		71.02	1.851	21.	39.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		893.08	2.951	30.	89.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		23.67	1.374	21.	29.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	17.22	1.236	18.	22.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	25.82	1.412	48.	68.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	49.50	1.695	2.	3.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	TIBIALIS	191.53	2.282	24.	55.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		1426.78	3.154	24.	76.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		88.08	1.935	48.	93.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		1181.45	3.072	72.	221.	
INSECTA	PLECOPTERA				34.43	1.537	48.	74.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			680.03	2.833	24.	68.	
INSECTA	PLECOPTERA	PERLODIDAE	MEGARCYS		34.43	1.537	24.	37.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		17.22	1.236	12.	15.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		974.86	2.989	16.	48.	
INSECTA	PLECOPTERA	PERLIDAE	CALINEURIA		34.43	1.537	24.	37.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		172.16	2.236	6.	13.	
INSECTA	PLECOPTERA	PELTOPERLIDAE	YORAPERLA		60.26	1.780	24.	43.	
INSECTA	PLECOPTERA	LEUCTRIDAE			225.98	2.354	18.	42.	
INSECTA	PLECOPTERA	PERLODIDAE			137.73	2.139	48.	103.	
INSECTA	PLECOPTERA	PERLIDAE			34.43	1.537	24.	37.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		172.16	2.236	108.	241.	
INSECTA	TRICHOPTERA				25.82	1.412	72.	102.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		25.82	1.412	108.	152.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHE		17.22	1.236	18.	22.	
INSECTA	TRICHOPTERA	LIMNephilidae	NEOPHYLAX		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		152.79	2.184	24.	52.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		142.03	2.152	18.	39.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		34.43	1.537	24.	37.	
INSECTA	TRICHOPTERA	LEPIDOSTOMATIDAE			6.46	0.810	18.	15.	
INSECTA	COLEOPTERA	ELMIDAE			1123.34	3.051	104.	317.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	51.65	1.713	24.	41.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		17.22	1.236	36.	44.	
INSECTA	DIPTERA	SIMULIIDAE			8.61	0.935	108.	101.	
INSECTA	DIPTERA	CHIRONOMIDAE			2877.22	3.459	108.	374.	
INSECTA	DIPTERA	EMPIDIDAE			23.67	1.374	95.	131.	
INSECTA	DIPTERA	CERATOPOGONIDAE			34.43	1.537	108.	166.	
INSECTA	DIPTERA	DIXIDAE			10.76	1.032	108.	111.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	25.82	1.412	30.	42.	
CRUSTACEA	COPEPODA				103.30	2.014	108.	218.	
CRUSTACEA	OSTRACODA				120.51	2.081	108.	225.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		51.65	1.713	108.	185.	
OLIGOCHAETA					540.15	2.733	108.	295.	
ARACHNIDA	HYDRACARINA				705.88	2.849	98.	279.	
NEMATODA					17.22	1.236	108.	133.	
TOTALS					12677.43	4.103			1.10

# TOTAL SAMPLE STATISTICS

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 09 19 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	50	9585.	8058.	11112.	2227.90	10.39	23.24	4.4001	0.2209	54.	54.

## SPECIES ANALYSES

STATION: 3.3

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 09 19 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA				17.22	1.236	64.	79.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		456.22	2.659	21.	56.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		725.22	2.860	30.	86.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		413.18	2.616	21.	55.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	17.22	1.236	48.	59.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	62.41	1.795	2.	4.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		897.38	2.953	24.	71.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		137.73	2.139	48.	103.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		408.88	2.612	72.	188.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DELANTALA	8.61	0.935	24.	22.	
INSECTA	PLECOPTERA				43.04	1.634	48.	78.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			34.43	1.537	24.	37.	
INSECTA	PLECOPTERA	PERLODIDAE	SKWALA	PARALLELA	43.04	1.634	18.	29.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		60.26	1.780	48.	85.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		25.82	1.412	12.	17.	
INSECTA	PLECOPTERA	TAENIOPTERYGIDAE	TAENIONEMA		103.30	2.014	48.	97.	
INSECTA	PLECOPTERA	PTERONARCYIDAE	PTERONARCELLA	BADIA	68.86	1.838	24.	44.	
INSECTA	PLECOPTERA	CAPNIIDAE			195.83	2.292	32.	73.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		182.92	2.262	16.	36.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	23.67	1.374	18.	25.	
INSECTA	PLECOPTERA	NEMOURIDAE	MALENKA		103.30	2.014	36.	73.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		593.95	2.774	6.	17.	
INSECTA	PLECOPTERA	LEUCTRIDAE			8.61	0.935	18.	17.	
INSECTA	PLECOPTERA	PERLODIDAE	PERLINODES		8.61	0.935	48.	45.	
INSECTA	PLECOPTERA	PERLIDAE			43.04	1.634	24.	39.	
INSECTA	TRICHOPTERA				8.61	0.935	72.	67.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		180.77	2.257	108.	244.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		464.83	2.667	18.	48.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		86.08	1.935	24.	46.	
INSECTA	TRICHOPTERA	LEPIDOSTOMATIDAE	LEPIDOSTOMA		15.06	1.178	18.	21.	
INSECTA	COLEOPTERA	ELMIDAE			619.78	2.792	104.	290.	
INSECTA	ODONATA	GOMPHIDAE	GOMPHUS		8.61	0.935	108.	101.	
INSECTA	ODONATA	GOMPHIDAE	OPHIOGOMPHUS		6.46	0.810	108.	87.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	8.61	0.935	24.	22.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		109.75	2.040	24.	49.	
INSECTA	DIPTERA	TIPULIDAE	HOLORUSIA		17.22	1.236	72.	89.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		23.67	1.374	36.	49.	
INSECTA	DIPTERA	SIMULIIDAE			157.10	2.198	108.	237.	
INSECTA	DIPTERA	CHIRONOMIDAE			1695.78	3.229	108.	349.	
INSECTA	DIPTERA	EMPIDIDAE			8.61	0.935	95.	89.	
INSECTA	DIPTERA	CERATOPOGONIDAE			40.89	1.612	108.	174.	
INSECTA	DIPTERA	PSYCHODIDAE	PERICOMA		154.94	2.190	36.	79.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	8.61	0.935	30.	28.	
CRUSTACEA	COPEPODA				86.08	1.935	108.	209.	
CRUSTACEA	OSTRACODA				25.82	1.412	108.	152.	
GASTROPODA		LYMNAEIDAE	LYMNAEA		6.46	0.810	108.	87.	
OLIGOCHAETA					643.45	2.809	108.	303.	
ARACHNIDA	HYDRACARINA				406.73	2.609	98.	256.	
NEMATODA					103.30	2.014	108.	218.	
CRUSTACEA	DECAPODA				15.06	1.178	108.	127.	
(Crayfish)									
TOTALS					9585.01	3.982			1.60

# TOTAL SAMPLE STATISTICS

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 09 09 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	44	10603.	7548.	13658.	4456.41	18.80	42.03	4.0233	0.2640	54.	53.

## SPECIES ANALYSES

STATION: 8.4

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 09 09 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPEHEROPTERA	HEPTAGENIIDAE	EPEORUS		51.65	1.713	21.	36.	
INSECTA	EPEHEROPTERA	HEPTAGENIIDAE	CINYGMULA		1497.79	3.175	30.	95.	
INSECTA	EPEHEROPTERA	EPEHERELLIDAE	EPEHERELLA	INERMIS	60.26	1.780	48.	85.	
INSECTA	EPEHEROPTERA	EPEHERELLIDAE	EPEHERELLA	DODDSI	17.22	1.236	2.	2.	
INSECTA	EPEHEROPTERA	EPEHERELLIDAE	EPEHERELLA	TIBIALIS	8.61	0.935	24.	22.	
INSECTA	EPEHEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		430.40	2.634	24.	63.	
INSECTA	EPEHEROPTERA	SIPHONURIDAE	AMELETUS		8.61	0.935	48.	45.	
INSECTA	EPEHEROPTERA	BAETIDAE	BAETIS		258.24	2.412	72.	174.	
INSECTA	EPEHEROPTERA	EPEHERELLIDAE	EPEHERELLA	MARGARITA	68.86	1.838	24.	44.	
INSECTA	PLECOPTERA				17.22	1.236	48.	59.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			103.30	2.014	24.	48.	
INSECTA	PLECOPTERA	PERLODIDAE	SKWALA	PARALLELA	94.69	1.976	18.	36.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		34.43	1.537	48.	74.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		197.98	2.297	12.	28.	
INSECTA	PLECOPTERA	PTERONARCYIDAE	PTERONARCELLA	BADIA	8.61	0.935	24.	22.	
INSECTA	PLECOPTERA	CAPNIIDAE			352.93	2.548	32.	82.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		60.26	1.780	16.	28.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	NEMOURIDAE	MALENKA		34.43	1.537	36.	55.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		327.10	2.515	6.	15.	
INSECTA	PLECOPTERA	LEUCTRIDAE			103.30	2.014	18.	36.	
INSECTA	PLECOPTERA	PERLODIDAE	PERLINODES		103.30	2.014	48.	97.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		111.90	2.049	108.	221.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		60.26	1.780	108.	192.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHE		68.86	1.838	18.	33.	
INSECTA	TRICHOPTERA	PSYCHOMYIDAE	PSYCHOMYIA		17.22	1.236	108.	133.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		172.16	2.236	18.	40.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		585.34	2.767	24.	66.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	ALISOTRICHIA		34.43	1.537	108.	166.	
INSECTA	COLEOPTERA	ELMIDAE			1799.07	3.255	104.	339.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	766.11	2.884	24.	69.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		25.82	1.412	36.	51.	
INSECTA	DIPTERA	SIMULIIDAE			43.04	1.634	108.	176.	
INSECTA	DIPTERA	CHIRONOMIDAE			1764.64	3.247	108.	351.	
INSECTA	DIPTERA	EMPIDIDAE			8.61	0.935	95.	89.	
INSECTA	DIPTERA	CERATOPOGONIDAE			17.22	1.236	108.	133.	
INSECTA	DIPTERA	PSYCHODIDAE	PERICOMA		241.02	2.382	36.	86.	
INSECTA	DIPTERA	PELECORHYNCHIDAE	GLUTOPS	ROSSI	25.82	1.412	30.	42.	
INSECTA	DIPTERA	TIPULIDAE			8.61	0.935	72.	67.	
CRUSTACEA	OSTRACODA				25.82	1.412	108.	152.	
PELECYPODA					8.61	0.935	108.	101.	
OLIGOCHAETA					335.71	2.526	108.	273.	
ARACHNIDA	HYDRACARINA				617.62	2.791	98.	273.	
NEMATODA					8.61	0.935	108.	101.	
TOTALS					10602.91	4.025			0.50



# TOTAL SAMPLE STATISTICS

STATION: 9.6

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 09 09 88

REPL	TOTAL NO. SPECIES	MEAN /SQM	CONFIDENCE LIMITS (80 PERCENT)		STANDARD DEVIATION	PERCENT SE OF MEAN	COEFF. OF VARIATION	DBAR	R	CTQA	CTQD
			LL	UL							
* NUMBERS DATA											
5	55	12968.	9147.	16789.	5573.67	19.22	42.98	4.0520	0.3002	51.	53.

## SPECIES ANALYSES

STATION: 9.6

TYGH CREEK, MT HOOD NATIONAL FOREST

DATE: 09 09 88

CLASS	ORDER	FAMILY	GENUS	SPECIES	MEAN NO/SQM	LOG10 NO/SQM	TOLERANCE QUOTIENT	LOG10 X TQ	MEAN WT GM/SQM
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	EPEORUS		25.82	1.412	21.	30.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	CINYGMULA		602.56	2.780	30.	83.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	RHITHROGENA		43.04	1.634	21.	34.	
INSECTA	EPHEMEROPTERA	HEPTAGENIIDAE	HEPTAGENIA		12.91	1.111	54.	60.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	COLORADENSIS	17.22	1.236	18.	22.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	INERMIS	21.52	1.333	48.	64.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	DODDSI	34.43	1.537	2.	3.	
INSECTA	EPHEMEROPTERA	LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA		727.38	2.862	24.	69.	
INSECTA	EPHEMEROPTERA	SIPHONURIDAE	AMELETUS		25.82	1.412	48.	68.	
INSECTA	EPHEMEROPTERA	BAETIDAE	BAETIS		118.21	2.065	72.	149.	
INSECTA	PLECOPTERA	NEMOURIDAE	VISOKA		124.82	2.096	108.	226.	
INSECTA	EPHEMEROPTERA	EPHEMERELLIDAE	EPHEMERELLA	MARGARITA	21.52	1.333	24.	32.	
INSECTA	PLECOPTERA				8.61	0.935	48.	45.	
INSECTA	PLECOPTERA	CHLOROPERLIDAE			331.41	2.520	24.	60.	
INSECTA	PLECOPTERA	PERLODIDAE	SKWALA	PARALLELA	8.61	0.935	18.	17.	
INSECTA	PLECOPTERA	PERLODIDAE	KOGOTUS		43.04	1.634	18.	29.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOPERLA		25.82	1.412	48.	68.	
INSECTA	PLECOPTERA	PERLODIDAE	CULTUS		94.69	1.976	12.	24.	
INSECTA	PLECOPTERA	TAENIOPTERYGIDAE	TAENIONEMA		8.61	0.935	48.	45.	
INSECTA	PLECOPTERA	PTERONARCYIDAE	PTERONARCYS	CALIFORNICA	8.61	0.935	18.	17.	
INSECTA	PLECOPTERA	CAPNIIDAE			318.50	2.503	32.	80.	
INSECTA	PLECOPTERA	NEMOURIDAE	ZAPADA		94.69	1.976	16.	32.	
INSECTA	PLECOPTERA	PERLIDAE	HESPEROPERLA	PACIFICA	17.22	1.236	18.	22.	
INSECTA	PLECOPTERA	NEMOURIDAE	MALENKA		68.86	1.838	36.	66.	
INSECTA	PLECOPTERA	NEMOURIDAE	AMPHINEMURA		103.30	2.014	6.	12.	
INSECTA	PLECOPTERA	PELTOPERLIDAE	YORAPERLA		68.86	1.838	24.	44.	
INSECTA	PLECOPTERA	LEUCTRIDAE			86.08	1.935	18.	35.	
INSECTA	PLECOPTERA	PERLIDAE			77.47	1.889	24.	45.	
INSECTA	PLECOPTERA	PERLODIDAE	ISOGENOIDES		8.61	0.935	24.	22.	
INSECTA	TRICHOPTERA				8.61	0.935	72.	67.	
INSECTA	TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE		223.81	2.350	108.	254.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	BRACHYCENTRUS		17.22	1.236	24.	30.	
INSECTA	TRICHOPTERA	BRACHYCENTRIDAE	MICRASEMA		98.99	1.996	24.	48.	
INSECTA	TRICHOPTERA	RHYACOPHILIDAE	RHYACOPHILA		335.71	2.526	18.	45.	
INSECTA	TRICHOPTERA	GLOSSOSOMATIDAE	GLOSSOSOMA		1007.14	3.003	24.	72.	
INSECTA	TRICHOPTERA	LEPIDOSTOMATIDAE			17.22	1.236	18.	22.	
INSECTA	TRICHOPTERA	HYDROPTILIDAE	ALISOTRICHIA		2612.53	3.417	108.	369.	
INSECTA	COLEOPTERA	ELMIDAE			1394.50	3.144	104.	327.	
INSECTA	MEGALOPTERA	SIALIDAE	SIALIS		8.61	0.935	72.	67.	
INSECTA	DIPTERA				4.30	0.634	108.	68.	
INSECTA	DIPTERA	TIPULIDAE	ANTOCHA	MONTICOLA	322.80	2.509	24.	60.	
INSECTA	DIPTERA	TIPULIDAE	DICRANOTA		8.61	0.935	24.	22.	
INSECTA	DIPTERA	TIPULIDAE	HEXATOMA		38.74	1.588	36.	57.	
INSECTA	DIPTERA	CHIRONOMIDAE			2393.02	3.379	108.	365.	
INSECTA	DIPTERA	EMPIDIDAE			4.30	0.634	95.	60.	
INSECTA	DIPTERA	CERATOPOGONIDAE			68.86	1.838	108.	199.	
INSECTA	DIPTERA	PSYCHODIDAE	PERICOMA		206.59	2.315	36.	83.	
INSECTA	DIPTERA	DIXIDAE			8.61	0.935	108.	101.	
INSECTA	DIPTERA	PSYCHODIDAE	MARUINA		17.22	1.236	36.	44.	
CRUSTACEA	COPEPODA				241.02	2.382	108.	257.	
CRUSTACEA	OSTRACODA				120.51	2.081	108.	225.	
TURBELLARIA	TRICLADIDA	PLANARIIDAE	PLANARIA		17.22	1.236	108.	133.	
OLIGOCHAETA					185.07	2.267	108.	245.	
ARACHNIDA	HYDRACARINA				434.70	2.638	98.	259.	
NEMATODA					25.82	1.412	108.	152.	

TOTALS

12967.95

4.113

1.10